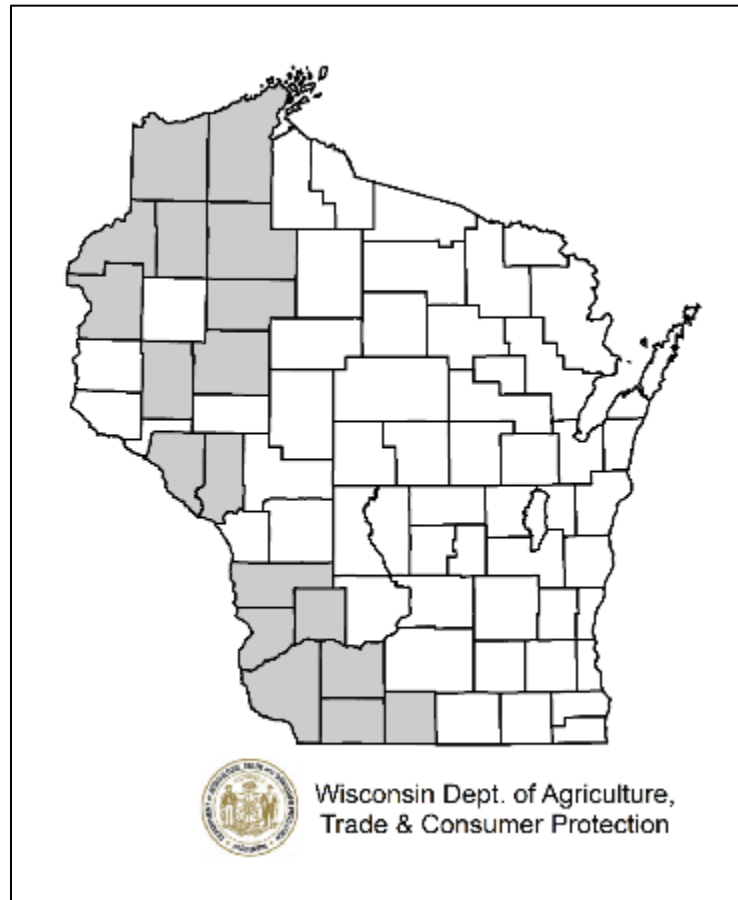


1 **DECISION NOTICE**
2 **and**
3 **ENVIRONMENTAL ASSESSMENT**

4
5 **Wisconsin Cooperative Gypsy Moth Program**
6 **Slow-the-Spread**
7

8 **United States Forest Service, State & Private Forestry**
9 **United States Forest Service, Chequamegon-Nicolet National Forest**
10 **Wisconsin Department of Agriculture, Trade and Consumer Protection**
11



38 BAYFIELD, BUFFALO, BURNETT, CHIPPEWA, CRAWFORD, DOUGLAS, DUNN, GRANT, GREEN, IOWA,
39 LAFAYETTE, POLK, RICHLAND, RUSK, SAWYER, TREMPLEAU, VERNON, AND WASHBURN COUNTIES OF
40 WISCONSIN
41

42 **April 2020**

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1.0 Purpose and Need for Action

1.1 Proposed Action

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) proposes a cooperative project with the United States Department of Agriculture, Forest Service, State and Private Forestry (Forest Service, S&PF) and Chequamegon-Nicolet National Forest (Forest Service, CNNF) to treat gypsy moth populations in Wisconsin that are along an area referred to as the Action Zone (Fig. 1). Treatments are proposed on 58 sites totaling approximately 174,237 acres in 2020 (Tables 1 & 2, Fig. 1).

The proposed alternative is to treat sites with either the bacterial insecticide *Bacillus thuringiensis* subsp. *kurstaki* (Btk), or mating disruption (MD) treatments. The Btk would be applied twice—the first application would be applied from May to mid-June. The second application would be 7-14 days later. A small number of acres may be retreated if heavy rain occurs soon after application. There are 28 proposed Btk sites totaling approximately 14,657 acres in 13 counties (Table 1). One aerial application of mating disruptant would be applied between late June and late July on 30 sites totaling approximately 159,580 acres in 18 counties (Table 2). Table 2 lists only 15 counties, there are three additional counties (Polk, Trempealeau and Washburn) that have mating disruption sites that are named after adjoining counties (Burnett11 and 13, and Buffalo12).

A portion of the proposed Bayfield11 mating disruption block (approximately 3,065 acres) lies on Forest Service, Chequamegon-Nicolet National Forest lands on the Washburn Ranger District in Bayfield County, WI. The remainder of the block is comprised of private, state, or other public ownership. All of the proposed treatment acres are considered in this Environmental Assessment. However, the ownership status does require two separate decision documents, one for lands within the Chequamegon-Nicolet National Forest, and one for private, state, and other publicly owned lands. See section 1.4 (Decisions to be made and Responsible Officials) for further clarification.

1.2 Project Objective

The objective of the Wisconsin Cooperative Slow-the-Spread (STS) Gypsy Moth Project is to:

- Slow the spread and buildup of gypsy moth populations that are located within or in very close proximity to the STS Action Zone in Wisconsin.

1.3 Need for Action

The STS program is a national program that aims to reduce the spread of gypsy moth from its natural rate of spread of approximately 20 km/yr to less than 7 km/yr. The STS program has identified and recommends the proposed sites be treated. The STS program includes a detailed protocol for selection and prioritization of treatment sites at the website [Slow the Spread of the Gypsy Moth](#)

Gypsy moth, *Lymantria dispar* (Lepidoptera: Erebiidae), is an exotic defoliator in North America. Gypsy moth caterpillars are able to feed on the leaves of a wide variety of trees and shrubs. In the Great Lakes region, highly preferred hosts include oak, aspen, paper birch, basswood, and willow; all common tree species across Wisconsin. High numbers of gypsy moth caterpillars can cause a substantial public nuisance and a reduction in tree growth and overall tree health. Following large outbreaks, some tree mortality can occur, especially when outbreaks

persist in an area for two to three consecutive years. Widespread caterpillar outbreaks can alter water quality, wildlife habitat, microclimate, and soil fertility (SEIS, Appendix L).

Table 1. Proposed Wisconsin gypsy moth Btk[†] treatment sites for 2020. Blocks named by county.

Block Name	Treatment	Dosage/acre ^{††}	Applications	Treatment acres
Bayfield1	Btk	24 CLU	2	1,415
Buffalo1	Btk	24 CLU	2	674
Burnett1	Btk	24 CLU	2	480
Burnett2	Btk	24 CLU	2	348
Burnett3	Btk	24 CLU	2	1,574
Burnett4	Btk	24 CLU	2	431
Chippewa1	Btk	24 CLU	2	775
Dunn1	Btk	24 CLU	2	492
Dunn2	Btk	24 CLU	2	429
Grant1	Btk	24 CLU	2	283
Grant2	Btk	24 CLU	2	671
Green1	Btk	24 CLU	2	220
Iowa1	Btk	24 CLU	2	287
Iowa2	Btk	24 CLU	2	327
Lafayette1	Btk	24 CLU	2	376
Lafayette2	Btk	24 CLU	2	370
Lafayette3	Btk	24 CLU	2	329
Lafayette4	Btk	24 CLU	2	348
Lafayette5	Btk	24 CLU	2	253
Lafayette6	Btk	24 CLU	2	348
Richland1	Btk	24 CLU	2	404
Rusk1	Btk	24 CLU	2	549
Rusk2	Btk	24 CLU	2	940
Sawyer1	Btk	24 CLU	2	567
Vernon1	Btk	24 CLU	2	586
Vernon2	Btk	24 CLU	2	339
Vernon3	Btk	24 CLU	2	628
Vernon4	Btk	24 CLU	2	214
TOTAL Btk				14,657

[†] Btk = *Bacillus thuringiensis* subsp. *kurstaki*

^{††} billion Cabbage Looper Units (CLU)

Table 2. Proposed Wisconsin gypsy moth mating disruption (MD) treatment sites for 2020. Blocks named by county.

Block Name	Treatment	Dosage/acre [†]	Applications	Treatment Acres
Bayfield11	MD	15g	1	18,098
Buffalo11	MD	15g	1	4,120
Buffalo12	MD	15g	1	13,768
Burnett11	MD	15g	1	31,954
Burnett12	MD	15g	1	1,857
Burnett13	MD	15g	1	5,844
Chippewa11	MD	15g	1	901
Chippewa12	MD	15g	1	6,488
Chippewa13	MD	15g	1	4,426
Chippewa14	MD	15g	1	411
Crawford11	MD	15g	1	517
Douglas11	MD	15g	1	6,081
Dunn11	MD	15g	1	14,302
Dunn12	MD	15g	1	565
Dunn13	MD	15g	1	1,886
Dunn14	MD	15g	1	630
Dunn15	MD	15g	1	2,296
Dunn16	MD	15g	1	455
Dunn17	MD	15g	1	4,940
Dunn18	MD	15g	1	3,077
Grant11	MD	15g	1	1,422
Grant12	MD	15g	1	2,482
Grant13	MD	15g	1	1,102
Green11	MD	15g	1	4,876
Lafayette11	MD	15g	1	1,451
Lafayette12	MD	15g	1	1,490
Lafayette13	MD	15g	1	2,186
Rusk11	MD	15g	1	2,479
Rusk12	MD	15g	1	7,751
Rusk13	MD	15g	1	11,725
Total MD				159,580

[†]15 grams active ingredient disparlure

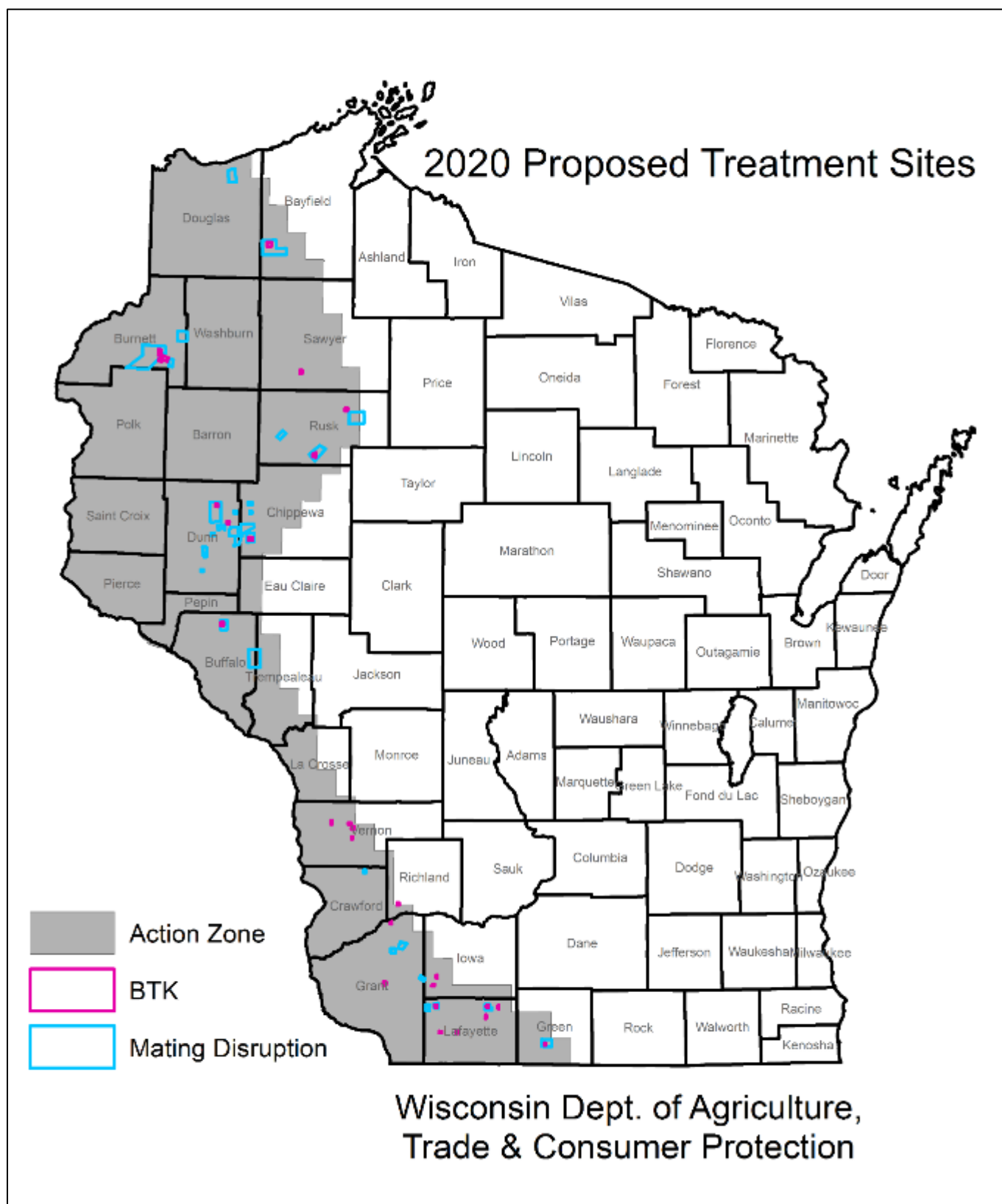


Fig. 1. Proposed Slow-The-Spread gypsy moth treatment sites for 2020 in Wisconsin and the 2020 Action Zone.

1.4 Decisions to be Made and Responsible Officials

The proposed alternative in this document requires participation by the Forest Service, S&PF, as a cooperator with the Wisconsin DATCP. The responsible official for the Forest Service, S&PF must decide the following:

- Should there be a cooperative treatment program, and if so, what type of treatment options should be used?
- Is the proposed action likely to have any significant impacts requiring further analysis in an Environmental Impact Statement (EIS)?

The responsible official for the Forest Service, S&PF is:

L. Carleen Yocum, Field Representative
USDA Forest Service, State & Private Forestry
1992 Folwell Avenue
St. Paul, MN 55108

The responsible official for the Forest Service, S&PF will make a decision before early May to ensure timely implementation for an effective program that meets the state's objectives on state and private lands if an action alternative is selected. This decision is not subject to appeal. If there are no significant impacts, this will be documented in a Decision Notice and Finding of No Significant Impact (FONSI) or other appropriate decision document, issued by the responsible official. If significant environmental impacts are found and the project is to continue, an Environmental Impact Statement (EIS) would be prepared.

The responsible official for the Forest Service, CNNF is:

Trevor Hahka, Washburn District Ranger
USDA Forest Service, Chequamegon National Forest
P.O. Box 578
Washburn, WI 54891

The responsible official for the Forest Service, CNNF will make a decision before July 1 to ensure timely application on National Forest system lands if an action alternative is selected. See section 5.0 for details on the opportunity to object for the portion of the proposed action on National Forest lands.

The responsible official for implementing the STS gypsy moth program is:

Sara Walling, Administrator
Division of Agricultural Resource Management
Wisconsin DATCP
P.O. Box 8911
Madison, WI 53708

1.5 Scope of the Analysis

Since 1996, the USDA has carried out its gypsy moth management responsibilities through the Forest Service and Animal and Plant Health Inspection Service (APHIS) and pursuant to a programmatic decision based on a 1995 environmental impact statement (EIS) for gypsy moth management. The Record of Decision (ROD) for that EIS was signed in January, 1996. It allowed three management strategies: suppression, eradication, and slow the spread. The 1995 EIS was updated with a final supplemental environmental impact statement (SEIS), titled “Gypsy Moth Management in the United States: A Cooperative Approach,” dated August, 2012. The ROD for the SEIS was signed by the Forest Service in November, 2012. It maintains the three strategies of suppression, eradication and slow the spread. These strategies depend upon the infestation status of the area: generally infested, non-infested, and transition. The counties involved in this environmental assessment (EA) are all within areas considered non-infested or transition.

Implementation requires that site-specific environmental analysis be conducted and public input gathered to identify and consider local issues before any federal slow the spread projects are authorized and implemented. Site-specific analyses are tiered to the programmatic SEIS and documented in accordance with Agency National Environmental Policy Act (NEPA) implementing procedures. As part of the analyses conducted for the SEIS, human health and ecological risk assessments were prepared (SEIS, Volumes III and IV). The purpose of tiering is to eliminate repetitive discussions of the issues addressed in the SEIS (40 CFR, 1502.20 and 1508.28 in Council on Environmental Quality, 1992).

This EA provides a site-specific analysis of the alternatives and environmental impacts of treating gypsy moth populations. The 58 proposed sites for treatment in 2020 include portions of Bayfield, Buffalo, Burnett, Chippewa, Crawford, Douglas, Dunn, Grant, Green, Iowa, Lafayette, Polk, Richland, Rusk, Sawyer, Trempealeau, Vernon, and Washburn counties in Wisconsin. Land ownership is largely private with some federal, state, tribal, and county ownership.

1.6 Summary of Public Involvement and Notification

The National Environmental Policy Act requires public involvement and notification for all projects utilizing federal funds that may have an effect on the human environment (40 CFR, 1506.6 in Council of Environmental Quality 1992).

The Wisconsin Cooperative Gypsy Moth Program has been seeking public input since 1990. During that time, numerous public meetings have been held annually in areas of the state where treatments have been conducted. These meetings have been scheduled with public officials and the general public.

In 2020, public meetings were scheduled to take place in mid-March, but were cancelled due to concerns of COVID-19 transmission. Webinar and video content is being developed for late April release to provide a venue for public hearing and comment. The scoping process also involved numerous press releases, newspaper, radio and television news stories, and postings on the DATCP website https://datcp.wi.gov/Pages/Programs_Services/GMAerialSpray.aspx

After the proposed treatment sites were chosen for 2020, press releases announcing the state’s plans were distributed. The first press release on March 3rd announced the overall plans and public meetings. A second release on April 27th announced the Btk treatments. A third press release will go out the week before MD

treatments begin. People also were referred to the website <http://gypsymoth.wi.gov/> or encouraged to call the program's hotline (1-800-642-MOTH). Phone calls to the Gypsy Moth Hotline and e-mails received in the Gypsy Moth Inbox were recorded and filed in the Administrative Record. During the spray season, each day's treatment plan, upcoming plans and treatment accomplishments will be available on the hotline, the web, and via Twitter, Facebook and the GovDelivery email system.

There is one mating disruption treatment block on the Chequamegon-Nicolet National Forest. A project summary and detailed maps were provided to the USFS for a 30 day public viewing and comment period.

Two or more press releases will inform the public when spraying would begin. A notification postcard would be delivered along USPS carrier routes in the area within and adjacent to Btk and MD sites approximately two weeks before spraying begins. During the spray season, the program hotline would be directly connected to the program's public information officers or gypsy moth personnel at the command center.

Packets of information about gypsy moth, Btk, and MD would be mailed and/or emailed to county public health departments, sheriff departments, town chairpersons, county clerks, city and school administrators and other local officials before sending the press release. Additionally, these entities would be contacted one or two days prior to every treatment in their respective areas by email or phone.

During the course of the treatment season, DATCP's public information team responds to interview requests from media, including newspapers, and television and radio stations. Information about Wisconsin's gypsy moth program also is distributed to the public at several large public events held throughout the year.

Information gathered during the 2020 public meetings and from public meetings held in previous years, along with material collected from resource professionals, industry, and environmental groups was used to develop issues and concerns related to this project. Two broad categories were developed: (1) issues used to formulate alternatives, and (2) other issues and concerns.

1.7 Issues Used to Formulate the Alternatives

Each of the major issues is introduced in this section. Discussion pertaining directly to each issue as it relates to the alternatives can be found in Chapters 2.0 and 4.0.

Issue 1. Human Health and Safety. Four major concerns exist under this issue: (1) the risk of an aircraft accident, (2) the risk of a pesticide spill, (3) the direct risk of Btk or MD exposure to humans, and (4) the effect of future gypsy moth outbreaks on people.

Issue 2. Effects on Non-target Organisms and Environmental Quality. Will the use of Btk or MD affect organisms other than gypsy moth? Also, the possible effects of spraying Btk or applying MD must be discussed in conjunction with the possible effects that might occur if gypsy moth becomes established.

Issue 3. Economic Impacts of Treatment vs. Non-Treatment. Gypsy moth outbreaks can have significant economic impacts due to effects on the timber resource, nursery and Christmas tree producers and recreational activities. Funding sources to pay for management of this insect will need to be developed. Furthermore, Wisconsin's treatment efforts will delay the detrimental impacts on other neighboring states. Those states and

others, along with APHIS can impose regulatory restrictions on forest and nursery products and recreation vehicles to reduce the likelihood of long distance spread from known infested areas.

Issue 4. Likelihood of Success of the Project and the Wisconsin Program. (1) What is the likelihood of slowing the spread of gypsy moth? (2) How does that likelihood affect the alternatives proposed?

1.8 Other Issues and Concerns

Other issues and concerns were used to develop mitigating measures, management requirements and constraints. The issues and concerns are posed as questions below and answered in Appendix A.

- How does Btk affect gypsy moth and what happens to it in the environment?
- Are biological control tactics being considered in Wisconsin?
- What is done to maintain privacy for residents during post-treatment trapping projects on private property?
- Will children going to school be subject to spraying?
- Will Btk or mating disruptant spot car finishes and houses?
- What are the inert components in Btk formulations?

1.9 Summary of Authorizing Laws and Policies

Federal

Authorization to conduct treatments for gypsy moth infestations is given in the Plant Protection Act of 2000 (7 U.S.C. section 7701 et. seq.).

The Cooperative Forestry Assistance Act of 1978 provides the authority for the USDA and state cooperation in management of forest insects and diseases. The law recognizes that the nation's capacity to produce renewable forest resources is significantly dependent on non-federal forestland. The 2018 Farm Bill (P.L. 115-334, Sec 8 [16 U.S.C. 2104]) reauthorizes the basic charter of the Cooperative Forestry Assistance Act of 1978.

The Forest Service and APHIS cooperate on state gypsy moth projects based on a Memorandum of Understanding (1989) between the two federal agencies.

The National Environmental Policy Act (NEPA) of 1969 (P.L. 91-190), 42 USC 4321 et. seq. requires a detailed environmental analysis of any proposed federal action that may affect the human environment.

The Federal Insecticide, Fungicide and Rodenticide Act of 1947, (7 USC 136) as amended, known as FIFRA, requires insecticides used within the United States be registered by the United States Environmental Protection Agency (EPA).

Section 7 of the Endangered Species Act of 1973, as amended (16 USC 1531 et. seq.) prohibits federal actions from jeopardizing the continued existence of federally listed threatened or endangered species or adversely affecting critical habitat of such species.

Section 106 of the National Historical Preservation Act and 36 CFR Part 800: Protection of Historic Properties requires the State Historic Preservation Officer be consulted regarding the proposed activities.

USDA Departmental Gypsy Moth Policy (USDA 1990) assigns the Forest Service and APHIS responsibility to assist states in protecting non-federal lands from gypsy moth damage.

Executive Order #12898. Consistent with this Executive Order, the Forest Service considered the potential for disproportionately high and adverse human health or environmental effects on any minority or low-income populations. The proposed treatment sites have been determined based on gypsy moth finds using STS protocols. The proposed treatment itself will have minimal effects, and it will not have disproportionate effects to any minority or low-income population.

State

DATCP has state statutory authority [ss.94.01 (4)] to conduct detection and control projects for plant pests in Wisconsin. As a cooperator, DATCP is responsible for program implementation, assessment and analysis. DATCP, the DNR and the Forest Service will jointly conduct treatment and post-treatment evaluation.

Wisconsin endangered and threatened species within proposed treatment areas must be identified (ss. 29.604, NR 27).

Wisconsin state law requires an environmental assessment for the proposed use of pesticide or biological control agents (ATCP 3). This environmental analysis will meet the requirements of both federal and state environmental laws.

Aerial applicators must meet Wisconsin pesticide law (ATCP 29) to provide safe, efficient, and acceptable application of pesticides.

This project will be conducted in accordance with the National Pollutant Discharge Elimination System (NPDES) requirements and is operating under Wisconsin General Permit # WI-0064572-1 (Expires 30-Sept-2021).

2.0 Alternatives Including the Proposed Action

Alternatives are developed in this chapter. Some alternatives are eliminated from further consideration, while others are selected for detailed consideration.

2.1 Process Used to Formulate the Alternatives

The Record of Decision (ROD) for the SEIS that this document is tied to maintains the three strategies for gypsy moth management (eradication, slow the spread, and suppression) that were allowed in the 1995 gypsy moth management EIS. Therefore, the Forest Service can assist in funding and carrying out slow the spread projects. The ROD for the SEIS adds the insecticide tebufenozide to the previous list of 6 approved treatments from the 1995 EIS. Therefore, in 2020 seven treatments can be considered for use in developing treatment alternatives under the slow the spread strategy: MD; mass trapping; sterile insect technique; and the insecticides tebufenozide, diflubenzuron, Btk, and Gypchek.

Information pertinent to developing alternatives for managing gypsy moth in Wisconsin have been solicited from a number of groups: Wisconsin DATCP and DNR, University of Wisconsin, APHIS, Forest Service, other interested parties and the public (see 6.0 Persons and Agencies Consulted). In Wisconsin, management alternatives were developed and have been re-evaluated on numerous occasions since the early 1990s when gypsy moth populations were becoming more widespread in the state.

2.2 Treatment Options Eliminated from Detailed Study

The following treatment options that were available under the SEIS were eliminated from consideration:

Diflubenzuron (Dimilin). The label for diflubenzuron (Dimilin) prohibits its use over wetlands and directly to water. Treatment sites contain ponds, lakes, marsh, rivers and/or wetlands. Therefore, Dimilin is not considered for this project. In future projects, it may be evaluated for use.

Tebufenozide (Mimic). The label for Tebufenozide (Mimic) prohibits its use over wetlands and water. Ponds, lakes, marshes, rivers and/or wetlands are present in some treatment areas. Therefore, Mimic is not considered for this project. In future projects, it may be evaluated for use.

Gypchek (Nucleopolyhedral Virus). Gypchek has been used in previous years in Wisconsin in some treatment locations. This viral insecticide is very specific to gypsy moth caterpillars. Because of its specificity it is recommended for use on sites where gypsy moth numbers are relatively high and rare butterfly or moth species are likely to be feeding as caterpillars. Gypchek is a possible alternative to Btk treatments on these types of sites. In 2020, none of the treatment blocks overlap with known locations of rare, threatened or endangered Lepidoptera and therefore Gypchek use is not proposed.

Sterile insect technique. The SEIS documents the use of sterile insects for elimination of isolated gypsy moth populations. It also documents the obstacles of using this alternative: the limited release period; need to synchronize production of mass quantities of sterile pupae; and the logistical difficulties of repeated release over a 4-week period (SEIS, Appendix A, pp. 7-8). Giving consideration to these obstacles, sterile insect release is not considered for this project. In future projects, it may be evaluated for use.

Mass trapping. This option was eliminated for three reasons. First, the cost of mass trapping is significantly higher than aerial Btk or MD applications. Second, the logistics for placing and maintaining nine traps per acre —the recommended number — over large infestations is extremely difficult. And third, control over large areas by this method is infeasible.

2.3 Alternatives Considered in Detail

Alternative 1. THE NO ACTION ALTERNATIVE

The Wisconsin DATCP would not receive funding from the Forest Service, S&PF to conduct gypsy moth Slow the Spread treatments in 2020. Local gypsy moth populations would build and likely spread to surrounding areas. This is not a preferred alternative because damage and regulatory action would occur sooner than if the proposed alternative is selected.

Alternative 2. THE PROPOSED ALTERNATIVE

The Forest Service, S&PF and the Wisconsin DATCP would cost-share on 58 proposed treatment areas in 2020 — using Btk on 28 sites, and MD on 30 sites (Tables 1 & 2). The decision to apply Btk versus MD was carefully made through a series of detailed meetings by a panel comprised of experts from WI DATCP and the Forest Service, who considered the following with regard to each proposed treatment area: presence of gypsy moth life stages (e.g. egg masses, pupal cases), numbers of male moths captured in traps, and previous treatments in the treatment area. Following those three guidelines, the panel of experts chose Btk over MD for a treatment area deemed to have a gypsy moth population too high for MD to be a successful treatment. Btk and MD would be applied by low-flying fixed-wing aircraft.

This alternative proposes that funding would be made available by the Forest Service, S&PF for STS treatments on approximately 174,237 acres at 58 sites in 18 counties.

The bacterial insecticide Btk would be applied twice per treatment site. The Btk applications are at a dose of 24 billion Cabbage Looper Units (CLUs)/acre per application in 64 fluid oz. Applications would be made in May to mid-June during the time period when gypsy moth early instar caterpillars are feeding. A proportion of acres (estimated at 10–15%) may be retreated if heavy rain occurs soon after an application.

The MD application would be in late June to the end of July, prior to the flight period of male gypsy moth. The MD is applied at a rate of 15g active ingredient per acre and is applied once per treatment site.

2.3.1 Mitigating Measures that Apply to Alternative 2

Under this alternative, measures would be taken to mitigate possible treatment impacts. Specific safety procedures and guidelines are presented in the 2020 Safety Plan - WI Cooperative Gypsy Moth Program and are available from DATCP.

One of the primary functions of the Cooperative Gypsy Moth Program in conducting aerial spray operations is to make sure the safest possible project is conducted and the least possible impact to non-target organisms occurs. To achieve these objectives, the following has been done or would be done if this alternative was selected:

- In person public information meetings were scheduled to inform the public about the proposed action, answer questions, and record any concerns (see section 1.6). Those meetings were cancelled due to concerns about COVID-19. A virtual public meeting will be posted on the DATCP website, and questions and concerns can be submitted by email or by calling the gypsy moth hotline. Notification of the meetings was made to elected officials and through news releases to local newspapers, radio and television stations.
- Residents who reside on USPS carrier routes that are within proposed treatment sites would be notified of the proposed action via direct mailing, prior to application. The mailing would inform residents of the type of program that is planned.
- Information would include the type of aircraft to be used, how low the planes will be flying, the type of product to be used, why treatment is being done and a toll-free telephone number (1-800-642-MOTH) to call and website, <https://gypsymoth.wi.gov>, to go to for more information and to address questions or concerns about any ongoing project activities.
- Residents would be given the option of obtaining advance spray notification by calling the 1-800-642-MOTH number, which will be updated daily with the next planned spray activities.
- During the spring semester of the school year (May and early June), aerial applications would be shut down from 7:15 AM–8:30 AM in Btk treatment blocks that are considered urban areas, and have schools within the treatment boundary. There is one school located within a Btk treatment block in 2020 (Vernon4). MD treatments occur in late June–early July, when schools are out of regular session.
- DATCP would have personnel at airports to ensure that the Btk and MD applications are occurring in accordance with label direction. In addition, aerial observers would be used to ensure that only designated areas are treated.
- Pilots would be thoroughly briefed on treatment site locations.
- Aircraft would be guided using differential global positioning systems (DGPS) with a real-time display. A real-time display would be located at the command center so program managers can monitor the spray program.
- Pilots would be instructed not to treat open water such as lakes, ponds and visible rivers. They are instructed to treat forested areas.
- Ground personnel would be equipped with two-way radios to communicate with observation aircraft, which can, in turn, communicate with spray aircraft.
- Spraying would be done in conditions that minimize drift.
- Label directions would be followed. Mixers, loaders and pilots would wear protective clothing when required.
- Tankers with pesticide at mix/load areas would be guarded and/or secured to prevent vandalism.

- Consultations with Wisconsin DNR Bureau of Natural Heritage Conservation (formerly the Bureau of Endangered Resources) and the US Fish and Wildlife Service were done to determine if treatment sites might affect state or federally listed threatened and endangered species. Results are discussed in Section 3.2.

2.4 Comparative Matrix Summarizing the Consequences of the Alternatives

ISSUE	ALTERNATIVE 1: NO ACTION	ALTERNATIVE 2: PROPOSED ACTION
ISSUE 1 Human Health and Safety	With no federal funding, the state would still likely have a treatment program, though reduced in size. Therefore, the discussion under Alt. 2 would apply here as well. Gypsy moth itself can create health problems.	Risk to human health from Btk or MD is minimal. The risk of an aircraft crashing and/or a serious pesticide spill occurring does exist, but it is slight. Measures will be taken to minimize the chance of an accident.
ISSUE 2 Effects on Non-target Organisms And Environmental Quality	Future outbreaks would change some local forest ecosystems by reducing the oak and aspen components and opening stands to periods of increased light penetration. Some native insects would be directly impacted by loss of food and habitat due to leaf loss caused by gypsy moth feeding.	MD is highly specific to the gypsy moth. Btk would likely kill some non-target lepidopteran species in the treatment areas. However, this impact would likely be short-term since the proposed treatment areas should be re-colonized from neighboring untreated areas. No other non-target impacts should occur.
ISSUE 3 Economic and Political Impacts vs. Non-Treatment	Regulatory activity would need to be considered in infested counties. More widespread infestations would result in economic losses to the forestry and tourism industries. Funds will need to be obtained to deal with future suppression projects.	Since known populations are being treated, the need for quarantine restrictions would be delayed. Future projects are still likely and funding sources will need to be developed. Spray projects are often controversial and some complaints, comments and questions will circulate into the political and economic arenas.
ISSUE 4 Likelihood of Success of the Project and the State Program	Gypsy moth populations would likely expand in any untreated area making future control more difficult and costly.	Treatment should result in success in the treatment sites. However, more infestations are likely to be found and new infestations will occur. This would likely result in future projects. Eventually gypsy moth will become established across Wisconsin even if Alt. 2 is followed. However, statewide spread and buildup should be significantly delayed by following this alternative.

3.0 Affected Environment

3.1 Description of the Proposed Treatment Sites

All sites are visited in late winter to characterize land type, identify aerial hazard, and identify unanticipated site issues. All sites are overlaid with any potential conflicts, including towers, power lines, schools, registered organic farms, daycare centers, deer farms (Appendix B).

Table 3. Description of the 2020 proposed Btk and MD sites. Land use is divided into five general categories: agriculture (AG), forest (F), rural residential (RR), public land (PL), and urban (U). Site descriptions include further detail on land use, population density, and the presence of schools.

Btk Sites				
Spray Site	Land Use	Population Density	Urban (Y/N)	Schools (Y/N)
Bayfield1	F	Low	N	N
Buffalo1	AG/F	Low	N	N
Burnett1	AG/F/RR	Low	N	N
Burnett2	AG/F/RR	Low	N	N
Burnett3	AG/F/RR	Low	N	N
Burnett4	AG/F/RR	Low	N	N
Chippewa1	AG/F	Low	N	N
Dunn1	F	Low	N	N
Dunn2	AG/F	Medium	N	N
Grant1	RR/F	Low	N	N
Grant2	AG/RR	Low	N	N
Green1	U	High	Y	N
Iowa1	AG/RR	Low	N	N
Iowa2	AG/RR	Medium	N	N
Lafayette1	AG/F/RR/PL	Low	N	N
Lafayette2	AG/RR	Low	N	N
Lafayette3	AG/RR	Low	N	N
Lafayette4	AG/RR	Low	N	N
Lafayette5	PL/F	Low	N	N
Lafayette6	PL/F	Low	N	N
Richland1	AG/F/RR	Low	N	N
Rusk1	F	Low	N	N
Rusk2	F	Low	N	N
Sawyer1	F/PL	Low	N	N
Vernon1	AG/RR	Low	N	N
Vernon2	AG/RR	Low	N	N
Vernon3	AG/RR	Low	N	Y
Vernon4	U	High	Y	Y

MD sites

Spray site	Land Use	Population Density	Urban	Schools
Bayfield11	F/PL	Low	N	N
Buffalo11	AG	Low	N	N
Buffalo12	AG/F	Low	N	N
Burnett11	AG/F/PL/RR	Low	N	N
Burnett12	AG/RR	Low	N	N
Burnett13	AG/F/RR	Low	N	N
Chippewa11	AG/F	Low	N	N
Chippewa12	AG/F	Low	N	N
Chippewa13	AG/F	Low	N	N
Chippewa14	AG/F	Low	N	N
Crawford11	AG/RR	Low	N	N
Douglas11	AG/F/RR	Low	N	N
Dunn11	AG/F/PL	Low	N	N
Dunn12	F	Low	N	N
Dunn13	AG/F	Low	N	N
Dunn14	AG/F	Low	N	N
Dunn15	U/AG/F/RR	High	Y	N
Dunn16	AG	Low	N	N
Dunn17	AG/F	Medium	N	N
Dunn18	AG/F	Low	N	N
Grant11	AG/RR	Low	N	N
Grant12	AG/F/RR	Low	N	N
Grant13	AG/U	Medium	Y	N
Green11	U	High	Y	Y
Lafayette11	AG/PL/RR	Low	N	N
Lafayette12	AG/F/PL/RR	Low	N	N
Lafayette13	F/PL	Low	N	N
Rusk11	AG/F/RR	Medium	Y	N
Rusk12	AG/F	Low	N	N
Rusk13	AG/F	Low	Y	N

3.2 Threatened and Endangered Species

The Wisconsin DNR Bureau of Natural Heritage Conservation (WI BNHC) reviews the proposed treatment activities. The WI BNHC evaluates the program in regards to state and federally listed threatened and endangered species, as well as species considered rare or of special concern by the state, all cataloged in Wisconsin's Natural

Heritage Inventory program. Copies of the correspondence with the WI BHNC are on file at WI DATCP. In the 2020 review, no required changes to the proposed treatment proposal were required or suggested by the WI BNHC.

Section 7 of the Endangered Species Act prohibits federal actions from jeopardizing the continued existence of federally listed threatened or endangered species or adversely affecting critical habitat of such species. This project is considered a federal action. In order to avoid any negative impacts to federally listed endangered, threatened, candidate species, or their critical habitat, the Forest Service, S&PF did consult with the US Fish and Wildlife Service (FWS). Individual treatment sites along with proposed methods were evaluated for potential concerns. An informal consultation between the Forest Service, S&PF and FWS determined that no adverse effects were anticipated for any federally listed species. Copies of the correspondence with the Forest Service, S&PF and FWS are on file at DATCP.

Additionally, the Forest Service analyzed those areas to be treated on National Forest System lands for the effects of the project on federally listed species as well as on endangered, threatened, proposed, or sensitive species (Forest Service Manual [FSM] 2672.4). "Sensitive" species include "those plant and animal species identified by a Regional Forester for which population viability is a concern" (FSM 2670.5). The Forest Service is responsible for protecting all federally proposed and listed species and the Regional Forester Sensitive Species (sensitive species) on National Forest Lands.

3.3 Cultural and Historical Resources

The National Historic Preservation Act provides specific guidance for the preservation of prehistoric and historic resources when federal actions may have an adverse impact on these resources. The Wisconsin Historical Society stated that the project, as described, should not affect any properties that are listed in, or known to be eligible for inclusion in, the National Register of Historic Places (Letter on file with WI DATCP, 2020).

4.0 Environmental Consequences

This section is the scientific and analytic basis for the comparison of alternatives. It describes the probable consequences (impacts, effects) of each alternative on selected environmental resources. We assume both federal and state agencies act in agreement in selecting the same alternative.

4.1 Comparison of Environmental Consequences of Alternatives Considered in Detail

Issue 1. Human Health and Safety

Alternative 1. For this alternative, there would be no cooperative project, therefore risk of an aircraft accident or human contact with the mating disruptant or Btk would not exist. However, future impacts by gypsy moth to human health will occur sooner under Alternative 1 than if treatments are used to slow the spread of these gypsy moth populations. Gypsy moth outbreaks have been associated with adverse human health effects, including skin lesions, eye irritation, and respiratory reactions (SEIS, Appendix L, pp. 3-1 to 3-4). Gypsy moth caterpillars can become a serious nuisance that can cause psychological stress or anxiety in some individuals (SEIS, Appendix L, pp. 3-4 to 3-5).

Alternative 2.

Human exposure to Btk provides little cause for concern about health effects. A detailed analysis of the risks posed to humans by Btk, called Human Health Risk Assessment, was conducted for the SEIS (Volume III, Appendix F). "There is no information from epidemiology studies or studies in experimental mammals to indicate *B.t.k.* will cause severe adverse health effects in humans under any set of plausible exposure conditions" (SEIS, Volume III, Appendix F, p. 3-19). The only human health effects likely to be observed after exposure to Btk. involve irritation of the skin, eyes, or respiratory tract (SEIS, Volume III Appendix F, p. 3-19 to 3-32). "Given the reversible nature of the irritant effects of *B.t.k.* and the low risks for serious health effects, cumulative effects from spray programs conducted over several years are not expected" (SEIS, Volume III, Appendix F, p. 3-32). Glare and O'Callaghan (2000) provide a comprehensive review of *Bacillus thuringiensis*, including Btk. Glare and O'Callaghan (2000) conclude with this statement, "After covering this vast amount of literature, our view is a qualified verdict of safe to use."

The toxicity of insect pheromones used in mating disruption to mammals is relatively low and their activity is target-specific. Therefore the EPA requires less rigorous testing of these products than of conventional insecticides. Risk to human health due to exposure to disparlure, the active ingredient used in gypsy moth mating disruption applications, is discussed in the Disparlure Human Health Risk Assessment in the SEIS (Appendix. H, pp. 3-1 to 3-10). Once absorbed through direct contact, disparlure is very persistent in humans, and individuals exposed to disparlure may attract adult male moths for prolonged periods of time. This persistence is viewed as a nuisance and not a health risk (SEIS, Appendix. H, pp. 3-9). In acute toxicity tests, disparlure was not toxic to mammals, birds, or fish (SEIS, Appendix H, pp. 4-1 to 4-8) therefore no effects to human health are anticipated.

A slight risk of an accident always exists when conducting aerial applications. Btk may be applied either one or two times; MD uses one application. To further reduce this risk, a detailed work and safety plan is required prior to program implementation, which outlines guidelines for aircraft inspections, product loading, and conditions for safe applications.

The effect of gypsy moth outbreaks on humans would be delayed using this alternative.

Issue 2. Effects on Non-target Organisms and Environmental Quality

Both alternatives would have impacts on forest ecosystems in Wisconsin.

Alternative 1 - The “no action alternative” would likely result in a more rapid build-up of gypsy moth populations and defoliation of susceptible forested areas, especially oak and aspen dominated forests. In other parts of the northeastern U.S., gypsy moth outbreaks have changed the structure of some forest ecosystems by killing a portion of the oak component and encouraging tree species that gypsy moth caterpillars avoid, such as red maple (SEIS, Chapter 4, pp. 4-10). Gypsy moth outbreaks in North America have not resulted in widespread loss of oak, rather a subtle change in many locations towards a more mixed forest. In Wisconsin forests, maples and white pine should become more prevalent as gypsy moth caterpillars focus their feeding on oaks and aspen. The SEIS notes that gypsy moth infestations generally result in tree mortality losses of less than 15% of total basal area, with much of this occurring in oaks that are suppressed or intermediate in crown position at the time of widespread defoliation (Appendix L, p. 4-1).

Gypsy moth defoliation and subsequent tree mortality can affect non-target organisms. This is discussed in some detail in the SEIS (Appendix L, and Chapter 4, Section 4.3). Widespread leaf loss caused by the feeding of millions of caterpillars and the loss of some trees, especially oak trees, has a variety of impacts on the environment. Some of these changes are detrimental to certain species and other species are favored by what occurs during and after gypsy moth outbreaks. SEIS Chapter 4 (Section 4.3) discusses changes to soil condition, microclimate, water quality, water yield, acorn production, and other environmental factors that are impacted by the loss of leaf tissue, the waste material produced by large number of feeding caterpillars, and the tree mortality that can follow outbreaks. Some species of mammals, birds, terrestrial invertebrates, fish and aquatic invertebrates are negatively impacted by gypsy moth related feeding. Other species however, are either not impacted or find conditions altered to their benefit. As an example, acorn production can drop during and immediately following an outbreak and this can reduce populations of white-footed mice. But, dead trees favor some species of birds that use dead wood as nesting sites or locations to forage for wood or bark-infesting insects that thrive in dead and dying trees.

It should be noted that in 2020 defoliating populations are not expected in any of the proposed STS treatment sites in Wisconsin. The STS program targets treatments at very low gypsy moth population levels. It may be several years before local gypsy moth numbers rise to damaging levels, with or without treatments in 2020.

Alternative 2 – Using Btk and mating disruption is likely to maintain the forest condition in the short term (5–10 years) by eliminating gypsy moth populations in the treatment sites, thus keeping populations from expanding and causing defoliation. However, in the long term (10–15 years), gypsy moth will likely become more widely distributed in western Wisconsin even if this alternative is followed (See Issue 4).

“Btk may indirectly help in maintaining existing forest conditions, water quality, microclimate, and soil condition by delaying gypsy moth population increases” (SEIS, Chapter 4, p. 10). The risk of Btk to non-target organisms is discussed in the SEIS in a risk assessment found in Appendix F, and in Chapter 4 (pp. 10-15). Adverse effects due to Btk are unlikely in mammals. Btk effects in birds, plants, soil microorganisms, or soil invertebrates other than insects are not of plausible concern. The U.S. EPA classifies Btk as virtually nontoxic to fish. No toxicity data are

available on amphibians, though other strains of Bt appear to have low toxicity to this group. Btk does not harm garden plants. In fact, it is a common garden insecticide used against caterpillars such as the cabbage looper.

Btk has been shown to be toxic to several species of target and non-target Lepidoptera (SEIS, Appendix F). Btk selectively kills members of the insect order Lepidoptera that are actively feeding as caterpillars at or soon after the period of application, though not all non-target Lepidoptera are as sensitive to Btk as is gypsy moth (SEIS, Appendix F). Outside of the Lepidoptera, the negative impact of Btk on other insect orders is minor (SEIS, Appendix F). It is, therefore, more “selective” than many insecticides that kill a wider array of insects. However, concerns do exist over its possible negative impact on native caterpillars, which may occur in the proposed treatment areas. A detailed discussion of Btk and non-target Lepidoptera is presented in the SEIS (Appendix F).

Disparlure may indirectly help in maintaining existing forest conditions, water quality, microclimate, and soil condition by delaying gypsy moth population increases (SEIS, Chapter 4, p. 19). The Ecological Risk Assessment for disparlure (SEIS, Appendix H) notes that there is limited data available on the toxicity of disparlure, but based on available data the toxicity profile in terrestrial animals does not suggest that disparlure is likely to cause adverse effects at plausible levels of exposure. Disparlure appears to be essentially nontoxic to mammals and birds. In addition, it is not likely to cause toxic effects in aquatic species. Disparlure is able to disrupt mating in some closely related species of moths other than gypsy moth. However, all of these species are Asian or Eurasian, and not known from North America. There is no basis for asserting that mating disruption would occur in other non-target species in North America, including non-target insects, specifically native Lepidoptera.

Issue 3. Economic Impacts of Treatment vs. Non-Treatment

Alternative 1 – If no treatments were applied, the likely action would be to implement quarantine in many of these counties during the next year. Quarantine would regulate movement of firewood, logs, other timber products, mobile homes, recreational vehicles, trees, shrubs, Christmas trees, and outdoor household articles. This would create a financial impact to industries that deal with these products.

If current populations are not treated, they will continue to reproduce and grow in size. Defoliation would become noticeable in the future, but it would be difficult to predict exactly when noticeable defoliation would occur. Requests for federal assistance to suppress gypsy moth would be likely when defoliation occurs. Suppression projects are generally more expensive in total dollars than eradication projects because much larger areas are treated. The economic impact to state budgets would increase, as responsible agencies would need to administer and fund these suppression projects.

Following defoliation, negative financial impacts are likely to occur for recreational industries such as resorts and campgrounds. Homeowners, private woodland owners, and forest-based industries could be impacted by gypsy moth treatment costs, tree mortality, and adverse human health effects.

Alternative 2 – If treatments are applied, regulatory action is not likely for these counties during the next year and the impacts listed under Alternative 1 would be delayed. Economic analysis from STS demonstrated the use of Btk, mating disruption and other STS technology reduced the spread of gypsy moth by as much as 60% (Sharov et al. 2002, p. 32). Assessment of the economic feasibility of STS shows that over a 20-year period, the Benefit-Cost Ratio is 3:1, under conservative assumptions (Sills 2007).

Issue 4. Likelihood of Success of the Project

Alternative 1 – Male moth trapping results and other surveys do indicate that gypsy moth populations are spreading into previously uninfested areas of western Wisconsin, Minnesota, and Iowa. These populations are very likely to persist, grow, and expand if no treatments are done.

Alternative 2 – Significantly reducing or locally eradicating gypsy moth populations within the treatment sites using Btk or MD is likely. However, eradicating gypsy moth from Wisconsin is not feasible. This is due to many factors, including the widespread nature of the known populations in the state, and the fact that future populations are likely to infest the state from other infested areas. This would likely result in future projects. However, this alternative is much more likely to slow the spread and buildup of defoliating populations across the state than the Alternative 1. The STS program has been evaluated since 1990 and has reported significant and consistent declines in spread rate (Sharov et al., 2002; Sharov and Liebhold, 1998, Tobin et al., 2004).

4.2 Summary of Alternatives Considered in Detail

Alternative 2 offers the greatest probability of meeting the objective. The short-term impact that applications of Btk might have on local non-target Lepidoptera populations must be compared to the long-term impacts that gypsy moth infestations will have on the food sources for other insects and vertebrates. By identifying potential habitats of rare lepidopterans and using MD applications in those areas, this project should limit its effect on “sensitive” non-target lepidopterans. MD treatments make up about 90% of the proposed treatment acres in 2020.

Some tree mortality, especially of oak (*Quercus* spp.), will occur if gypsy moth becomes established. The long-term trend in future stands with gypsy moth present would be away from oaks toward forests containing species less preferred by gypsy moth. This would most likely mean more red and sugar maple and pine in many areas. Change in forest composition is likely. In some areas this change may have positive effects; in other areas, negative effects.

Alternative 2 delays the immediate economic impacts created by a possible federal quarantine, and it offers the best chance for slowing the spread and buildup of gypsy moth populations in the state. Thus, the economic and nuisance impacts associated with gypsy moth should be delayed over a longer time period. This should allow the orderly development of a well-balanced program.

4.3 Cumulative Effects

The Wisconsin STS program is large in scale, with approximately 174,237 acres being proposed for treatment in 2020. This relatively large scale of treatment acres is one reason to be concerned about cumulative effects. Cumulative effects are the incremental impacts of the action when added to past, present, and reasonably foreseeable actions. Repeated Btk treatments in adjacent years would make cumulative effects more likely. The program attempts to minimize that concern by using a combination of Btk, Gypchek, and mating disruption treatments. Mating disruption and Gypchek are very specific to the gypsy moth, and therefore, no cumulative effects would occur with these treatments. Over the last five years, approximately 90% of STS treatment acres in Wisconsin have either been treated with mating disruption or Gypchek. In 2020, approximately 159,580 acres (ca. 92%) of the proposed treated acres will be mating disruption. No Gypchek acres are planned in 2020.

In Btk treatment areas, cumulative effects are unlikely to occur when areas are not retreated in consecutive years. Over the last five years, more than 99% of the total acres in treatment sites have not been treated with Btk in the following year. Retreatment acres of Btk in the subsequent year is not substantial and usually a result of treatment failure the previous year. Analysis of all the counties considered for STS treatments reveals that < 1% of the total acres in these counties are proposed to be retreated in 2020 from sites treated in 2019.

4.4 Irretrievable and Irreversible Commitment of Resources

Irreversible commitments are those that cannot be undone, except perhaps in the extreme long term. The prime example would be extinction of a species. Irretrievable commitments are those that are lost for a period of time.

It is doubtful either alternative would lead to any irreversible commitment of natural resources. However, if Alternative 1, the no action alternative, is selected, some tree mortality will probably occur in the near future. This could be considered irretrievable, especially if it occurs in residential areas and parks.

5.0 Objection Process Applying to the Chequamegon-Nicolet National Forest

The portion of the proposed action on the Chequamegon-Nicolet National Forest (CENN) is subject to an objection process pursuant to 36 CFR 218, subparts A and B. Objections will only be accepted from those who submitted timely and specific written comments during the Forest Service 30-day public comment period in accordance with 36 CFR 218.5(a). A written objection must be submitted within 45 calendar days after publication of the opportunity to object legal notice in the Ashland Daily Press. However, when the 45-day filing period would end on a Saturday, Sunday, or federal holiday, the filing time is extended to the end of the next federal working day. The date of the publication of the notice is the only means for calculating the date by which objections must be received. The notice is planned for publication in the Ashland Daily Press during the week of April 27, 2020. For more information on the objection process see the project page on the Chequamegon-Nicolet National Forest website at <https://www.fs.usda.gov/project/?project=57732>.

As per 36 CFR 218.12, if no objection is received within the legal objection period, the decision for treatment on Forest Service land may be signed and implemented on, but not before, the fifth business day following the close of the objection filing period. If an objection is received, a final decision will not occur before all instructions identified by the Reviewing Officer have been addressed. A decision will be made on the treatments on National Forest lands by the responsible official (see section 1.4) after considering this Environmental Assessment and other project information.

6.0 List of Preparers

Christopher Foelker, Gypsy Moth Control Unit Supervisor, Wisconsin Department of Agriculture, Trade and Consumer Protection, Madison, Wisconsin.

EA Responsibility: Lead development for Environmental Assessment.

Experience and Education: Four years as WI gypsy moth program manager; Ten years of experience in forest insect pest management and research. PhD, State Univer. of New York-College of Env. Sci. & Forestry-Entomology; MS, Northern Arizona University-Forestry; BS, University of Wisconsin-Forest Science.

Nick Clemens, Gypsy Moth GIS/GPS Coordinator, Wisconsin Department of Agriculture, Trade and Consumer Protection, Madison, Wisconsin.

EA Responsibility: Block Editing, Mapping, Acreage Summaries.

Experience and Education: Over twenty years involvement with the Wisconsin Gypsy Moth Program. Post-graduate studies at University of Wisconsin – Madison, B.S.: University of Wisconsin – Stevens Point, Geography.

Steven Katovich, Forest Entomologist, USDA Forest Service, Forest Health Protection, St. Paul, Minnesota.

EA Responsibility: Participated in writing and reviewing the Environmental Assessment.

Experience and Education: 30 years of experience with the Forest Service as an entomologist and two years with the Wisconsin Department of Natural Resources. Ph.D., University of Minnesota in entomology; B.S., University of Wisconsin - Stevens Point, Forest Management.

Timothy Paul, NEPA Specialist, USDA Forest Service, Chequamegon Nicolet National Forest, Hayward, WI.

EA Responsibility: Participated in writing and reviewing the Environmental Assessment.

Experience and Education: 15 years of experience with the US Forest Service as NEPA interdisciplinary team specialist, B.S., Greenville College-Environmental Biology.

Jennifer Maziasz, NEPA Specialist, USDA Forest Service, Chequamegon Nicolet National Forest, Washburn, WI.

EA Responsibility: Participated in writing and reviewing the Environmental Assessment.

Experience and Education: 20+ years of experience with the US Forest Service in NEPA program management, B.S., M.S. Michigan Technological University.

7.0 Persons and Agencies Consulted

The Wisconsin Cooperative Gypsy Moth Program has been ongoing since 1990. Multiple people have been contacted in years prior to 2020. The information, comments and concerns obtained from those people are still valid in many cases. Therefore, some of the names listed below were contacted well before 2020.

Individuals and Organizations Consulted for Technical Information

Pat Manthey, WI DNR

Cathy Carnes, USDI Fish and Wildlife Service (Retired)

Donna Leonard, USFS (Retired)

Tom Coleman, USFS, STS Program Manager

Andrea Diss-Torrance, WI DNR

Drew Feldkirchner, WI DNR-Bureau of Natural Heritage Conservation

Melody Walker, WI DATCP

John Kyhl, USFS, Regional Pesticide Coordinator

Richard Reardon, USFS (Retired)

Stephen Nicholson, Valent BioSciences Corp.

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ROD** See Reference citation under USDA, 2014

SEIS** See Reference citation under USDA, 2012

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APPENDIX A - Issues and Concerns not used to Formulate the Alternatives

How does Btk affect gypsy moth and what happens to it in the environment? Btk is a gram positive spore-forming, crystal-producing member of the bacterial genus *Bacillus*. The mode of action is complex. The larvae must ingest the Btk delta-endotoxin. The crystalline protoxin is dissolved and activated in the insect gut before exerting its effects. The high pH of the insect's gut and the insect's gut proteases dissolve and convert the inactive protoxin to an active toxin. The toxin then binds to specific receptors on the cells in the insect's gut. This disrupts the gut integrity and leads to the death of the insect from starvation and septicemia. A combination of bacterial infection and starvation usually cause the death of the larvae in 7-10 days. For a summary on Btk, a review article by Reardon et al. (1994)¹ specifically discusses Btk for managing gypsy moth.

Studies indicate that Btk spores can persist in soil for several months depending on the soil type, soil flora, and other factors such as pH, moisture and solar radiation. Under favorable conditions, formulations of Btk that are presently available can remain viable against gypsy moth on foliage for 7-10 days. Normally, however, Btk is quickly degraded by ultraviolet light and loses potency after 3-5 days. Btk rarely persists in aquatic environments for longer than a few weeks. A Btk environmental risk assessment can be found in the SEIS (Appendix F).

Are other biological control tactics being considered in the Wisconsin Gypsy Moth Program? A program of establishing natural enemies of gypsy moth that could reduce the impact of this pest has been developed and is being implemented by the Wisconsin Cooperative Gypsy Moth Program. Releases of parasites and a fungal disease of gypsy moth have been done in Wisconsin since 1997. This program has been done largely in parts of the state considered infested with gypsy moth (counties that are quarantined). Biological control is not a major effort in the eradication and STS programs because natural enemies are not considered a viable technique in eradication (eliminating) and slowing the spread of gypsy moth populations.

Biological control agents are not released in Wisconsin without completion of a Wisconsin Environmental Assessment and finding of no significant impact by DATCP. If the biological agent is not present in Wisconsin, USDA-APHIS must also approve release.

What is done to maintain privacy for residents during post-treatment trapping projects on private property? Pheromone baited traps are used within the treatment sites to monitor success or failure. In many cases, this would entail entering private property to place and monitor traps.

Trappers will attempt to meet with residents at their door prior to setting traps. If a homeowner is adamant in not wanting a trap on their property, every effort will be made to place the trap in another location.

Will children going to school be subject to spraying? As discussed in the SEIS and in Section 4.1 of this document, Btk and mating disruption are considered safe for use around humans. However, since the potential for possible application onto school children exists, especially in urban areas during the time period when school buses are collecting students, measures have been prepared to reduce the likelihood of this occurring.

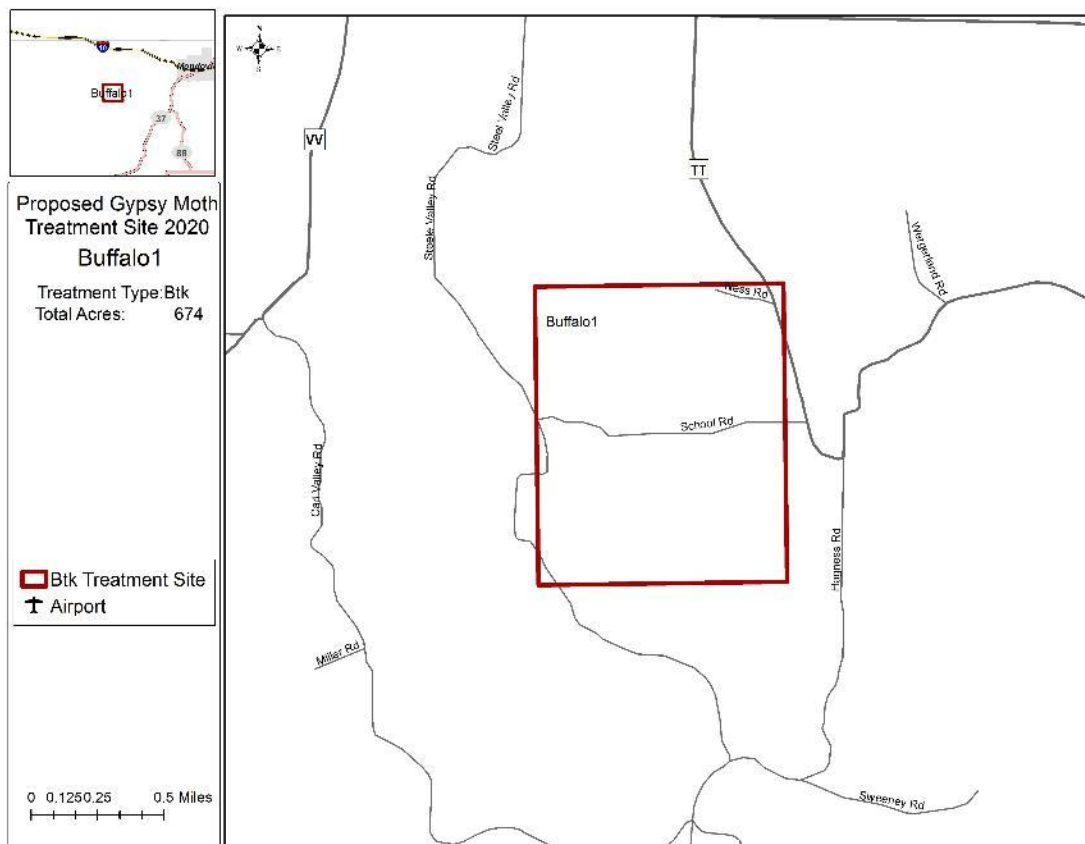
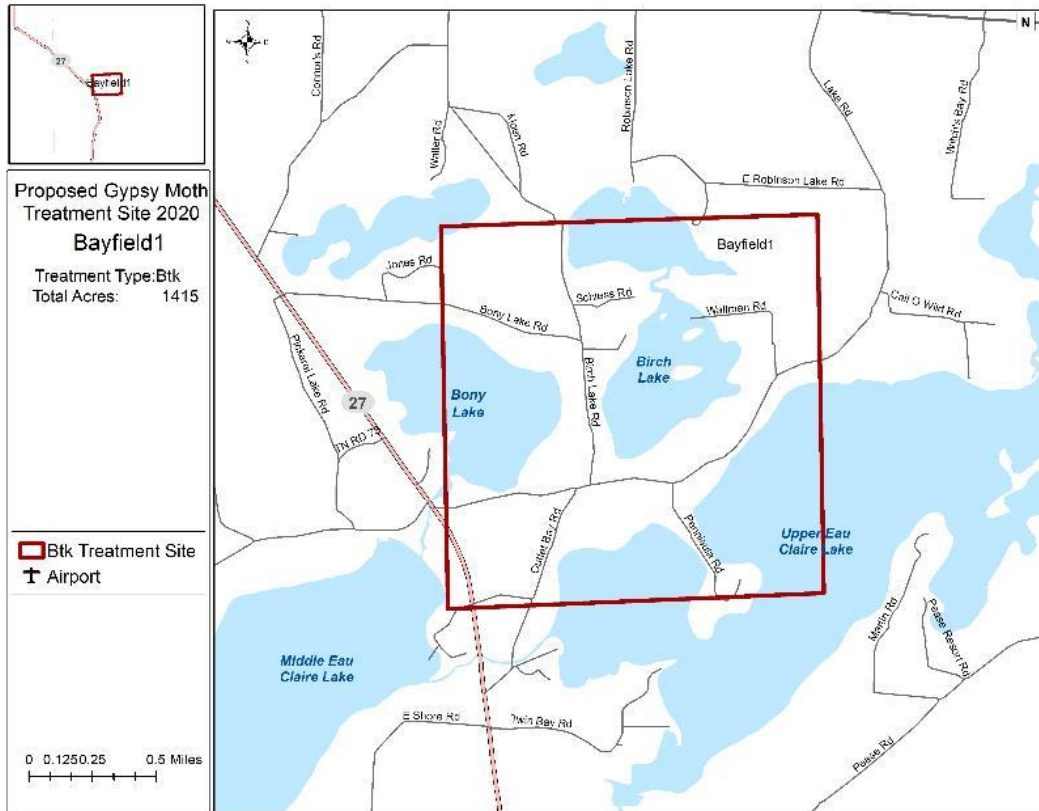
¹ Reardon, R., N. Dubois and W. McLane. 1994. *Bacillus thuringiensis* for managing gypsy moth: review. USDA Forest Service, National Center of Forest Health Management, FHM-NC-01-94, 32 pp.

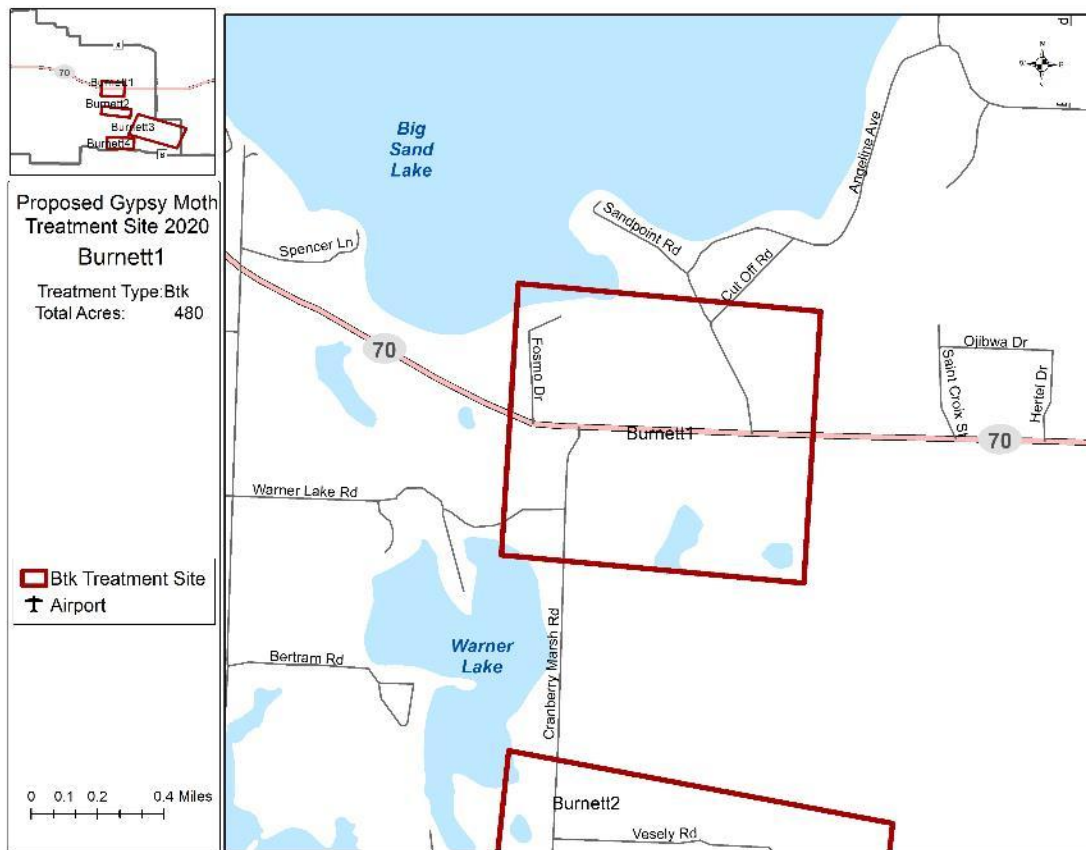
(Mitigating measure) During the month of May and the first week of June, aircraft operations will be shut down from 7:15 AM – 8:30 AM in blocks with schools. Daily treatment operations will be complete prior to afternoon release of school children.

Will Btk or mating disruptant spot car finishes and houses? The products used in the WI gypsy moth program with Btk and MD are not known to spot car finishes. The MD product manufacture recommends washing with a mild detergent and water to remove any droplets left on vehicles.

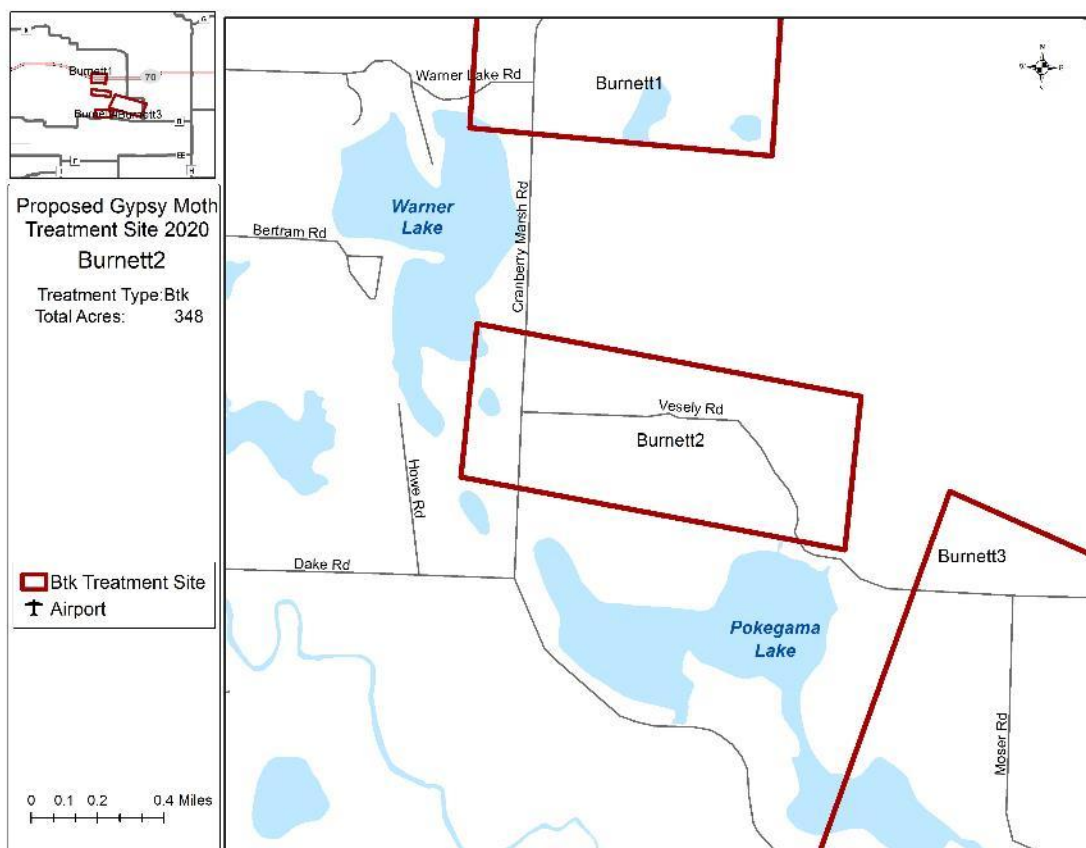
What are the inert components in Btk formulations? Products based on Btk contain a large percentage of bacteria and fermentation medium. However, they also contain additives that improve product stability and other desirable traits such as flowability. The additives are often referred to as an inerts. Most of the inerts are product specific and are considered proprietary information by the manufacturers of Btk products. Though not made public, the inerts are reviewed by the US EPA for safety purposes. Btk inerts are discussed in the SEIS, Appendix F (p. 3-14 and 3-15).

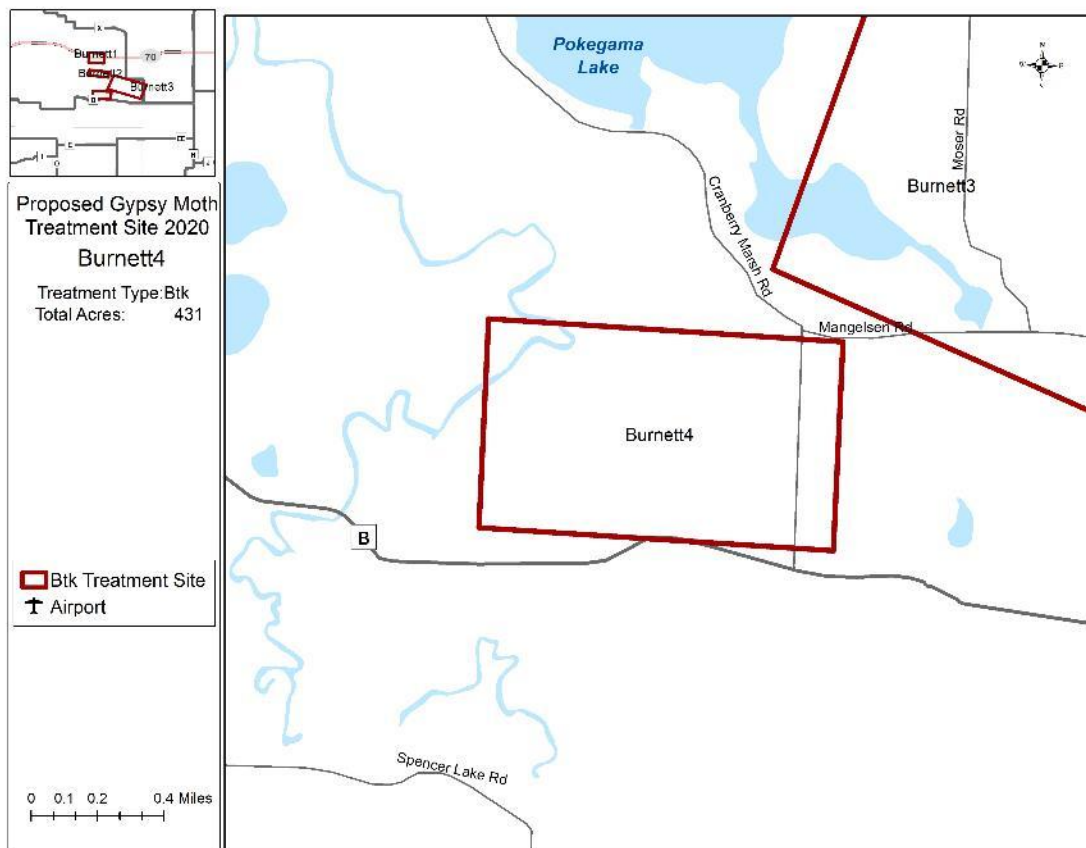
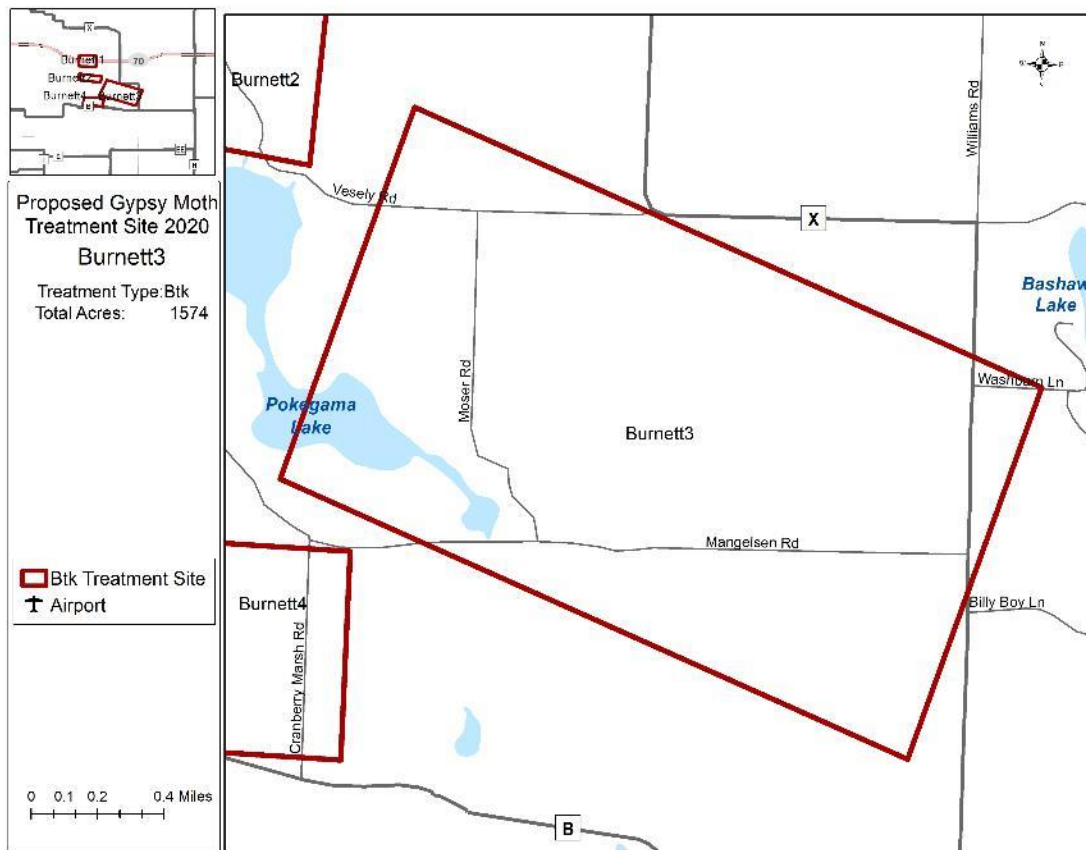
APPENDIX B - Maps of Treatment Blocks

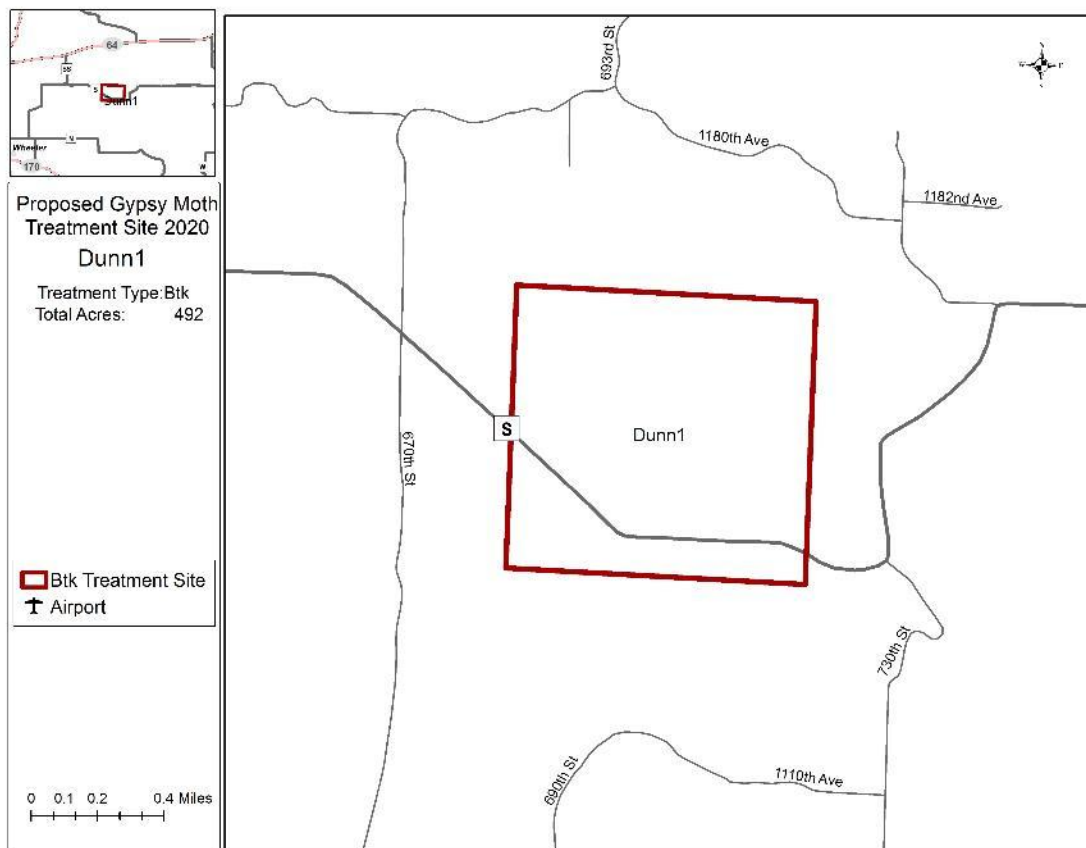
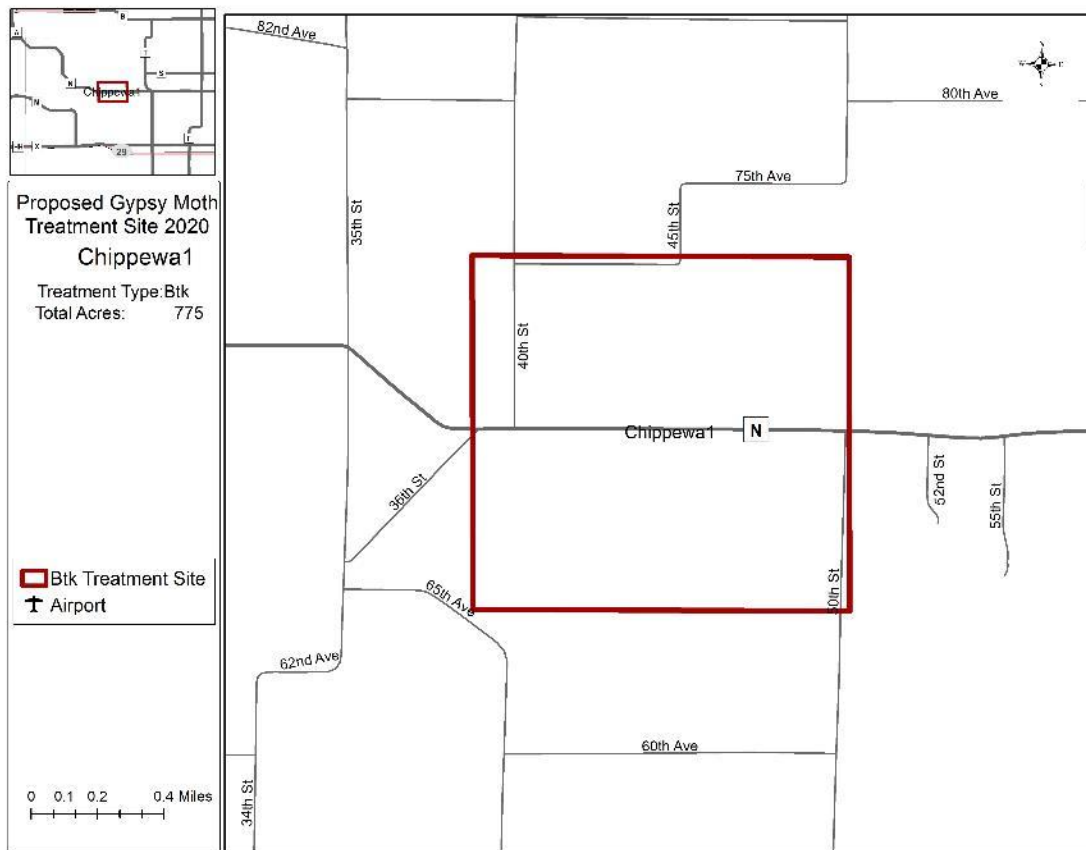


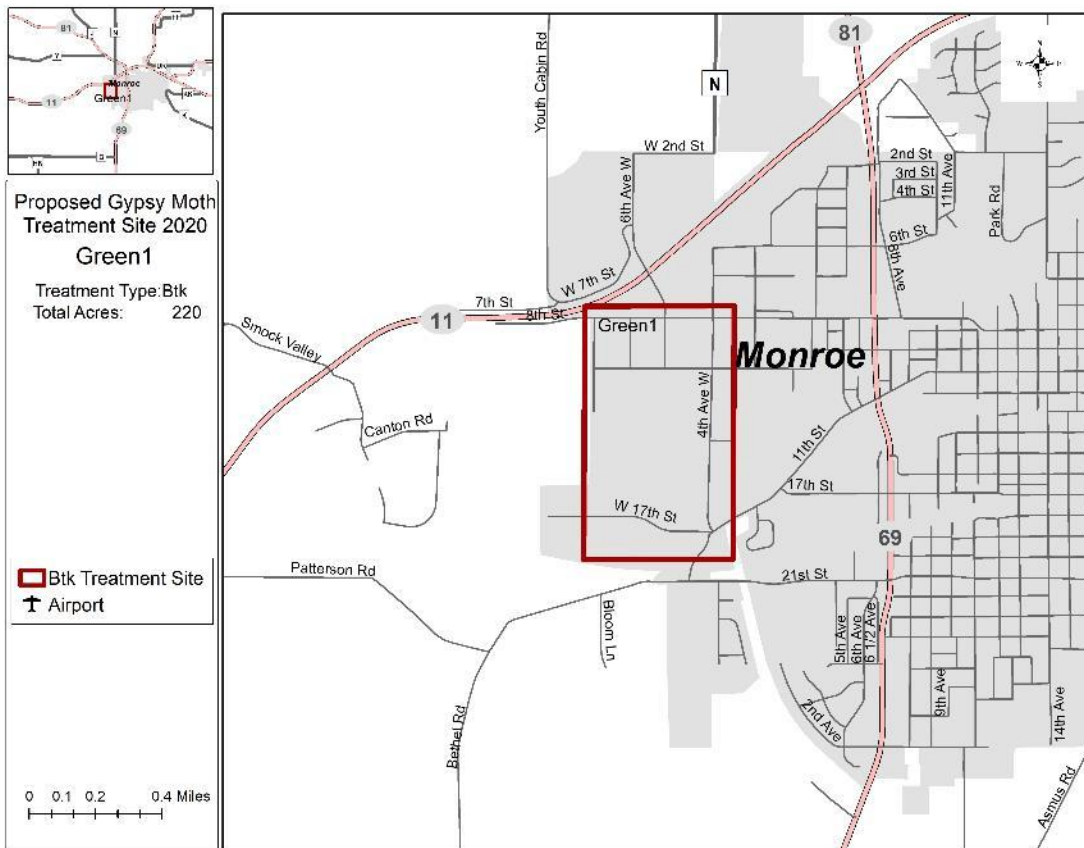
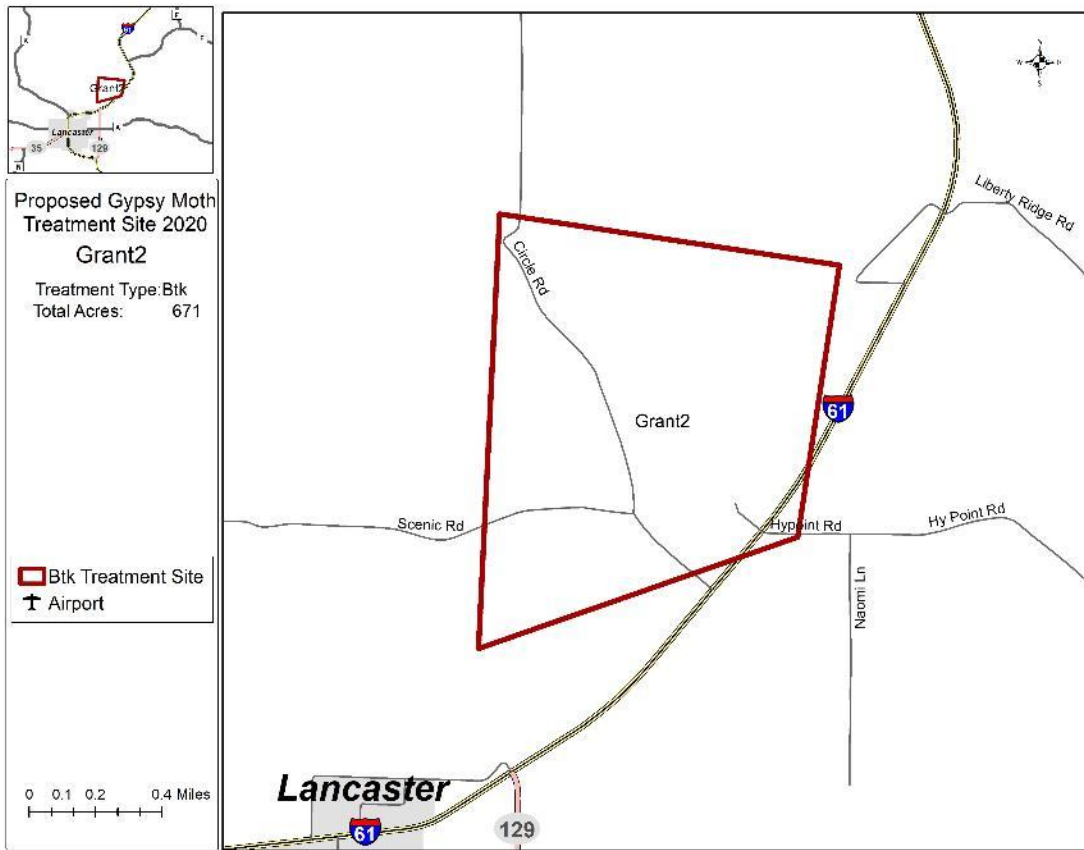


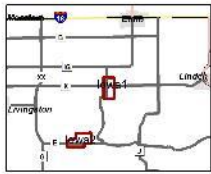
6












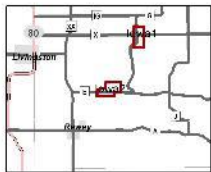
Proposed Gypsy Moth
Treatment Site 2020

Iowa1

Treatment Type:Btk
Total Acres: 287

 Btk Treatment Site
 Airport



0 0.1 0.2 0.4 Miles



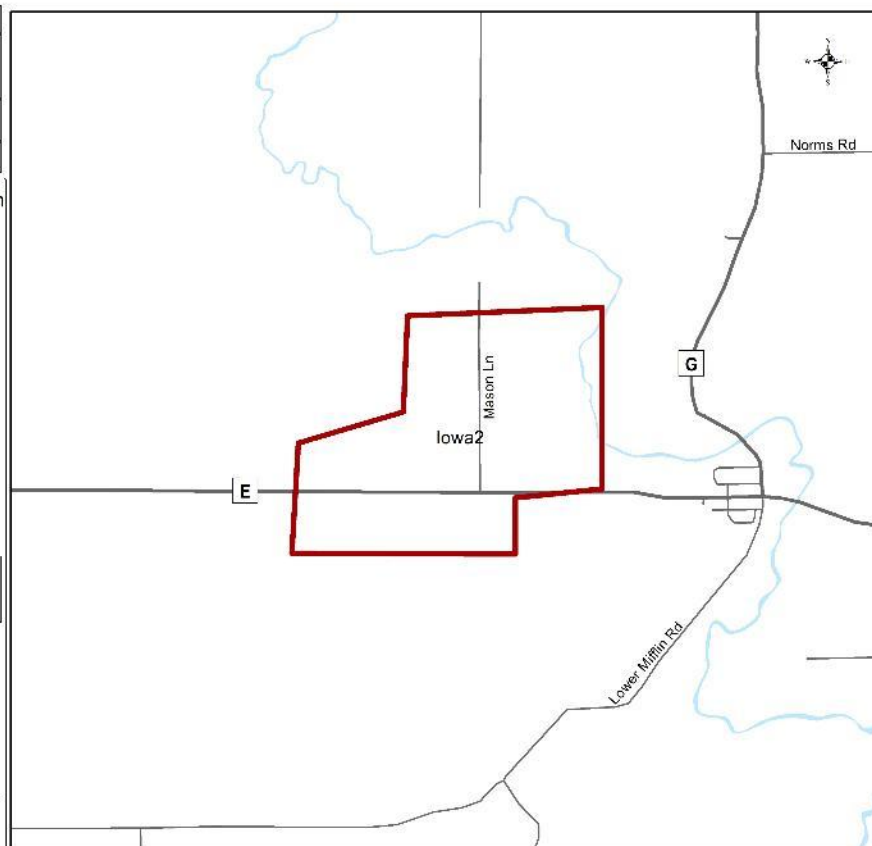
Proposed Gypsy Moth
Treatment Site 2020

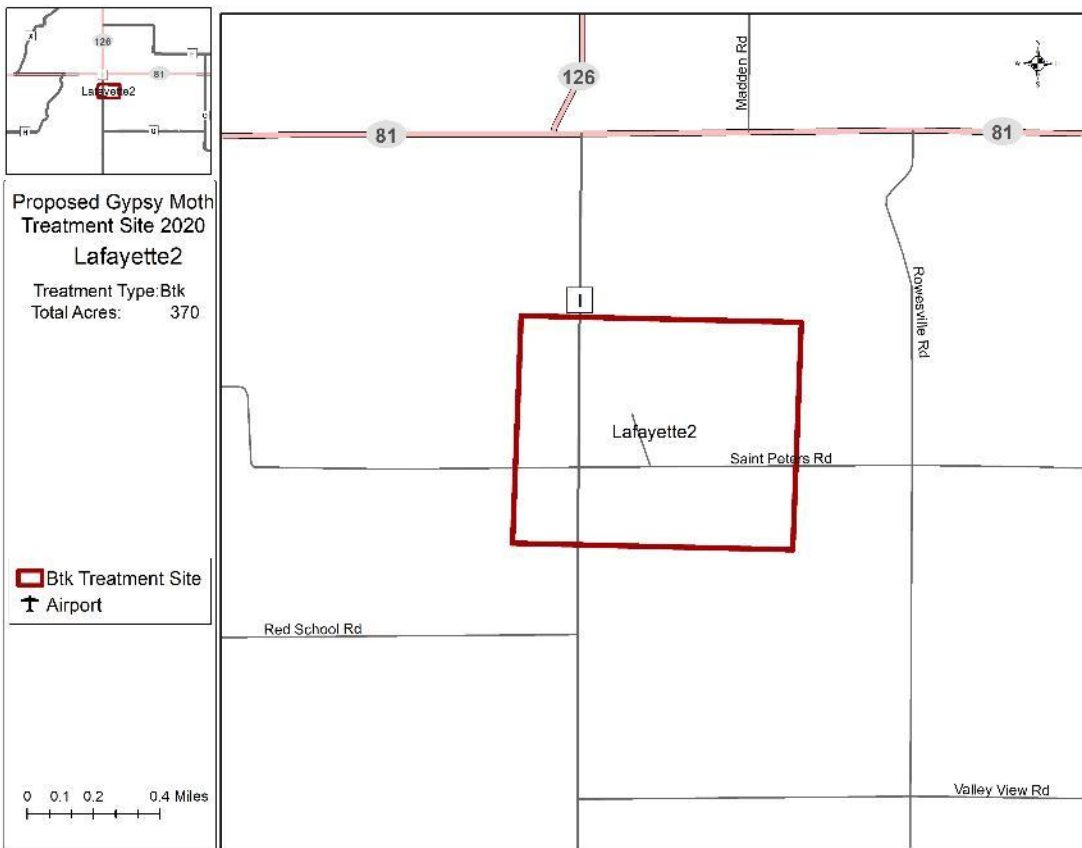
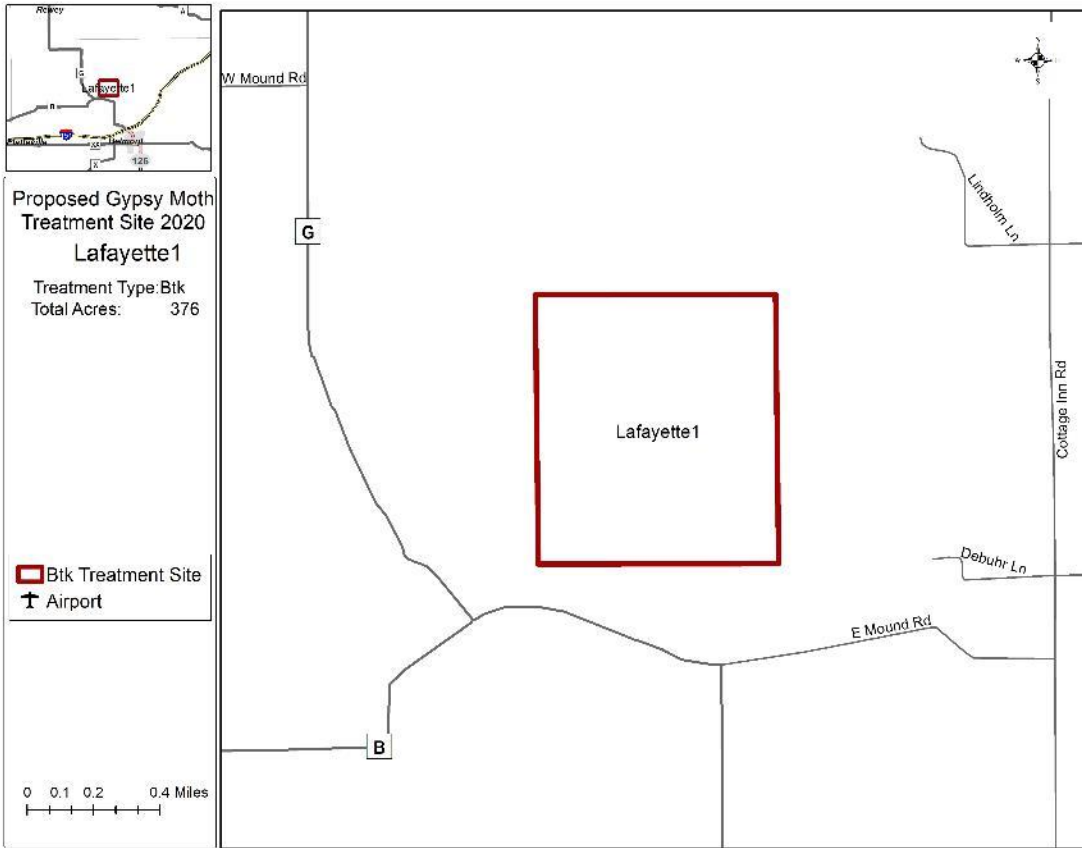
Iowa2

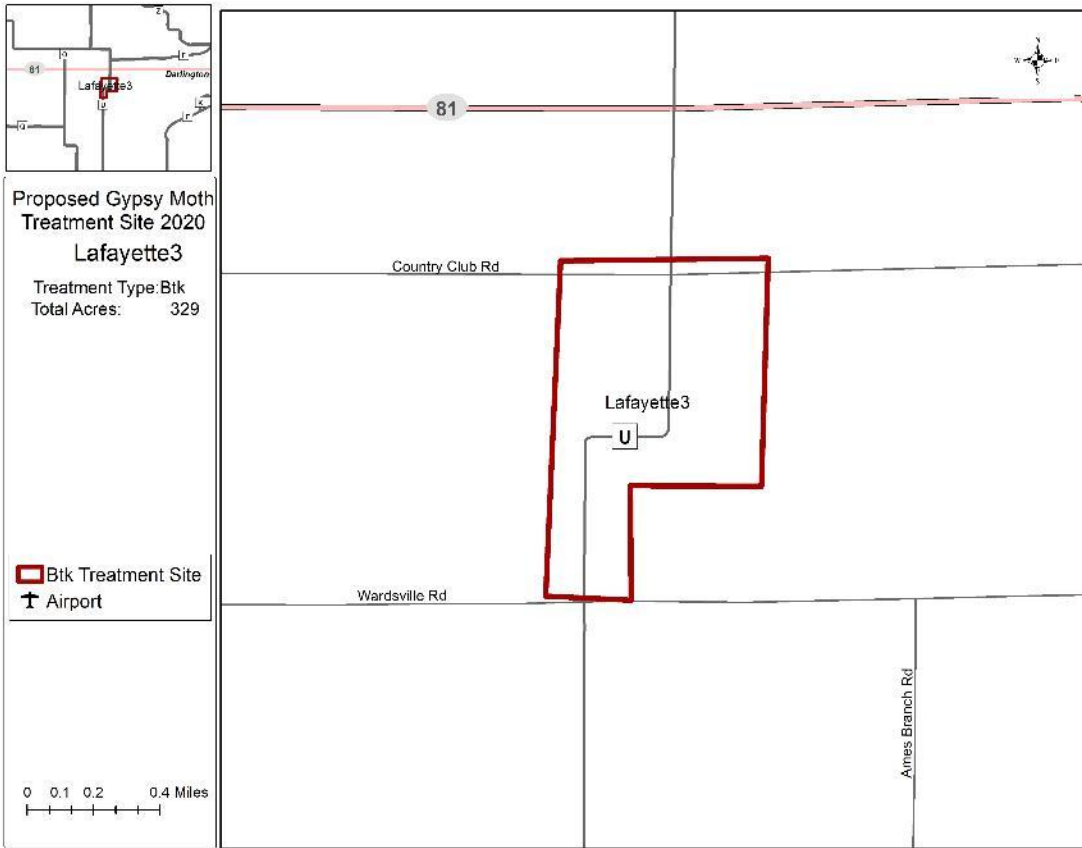
Treatment Type:Btk
Total Acres: 327

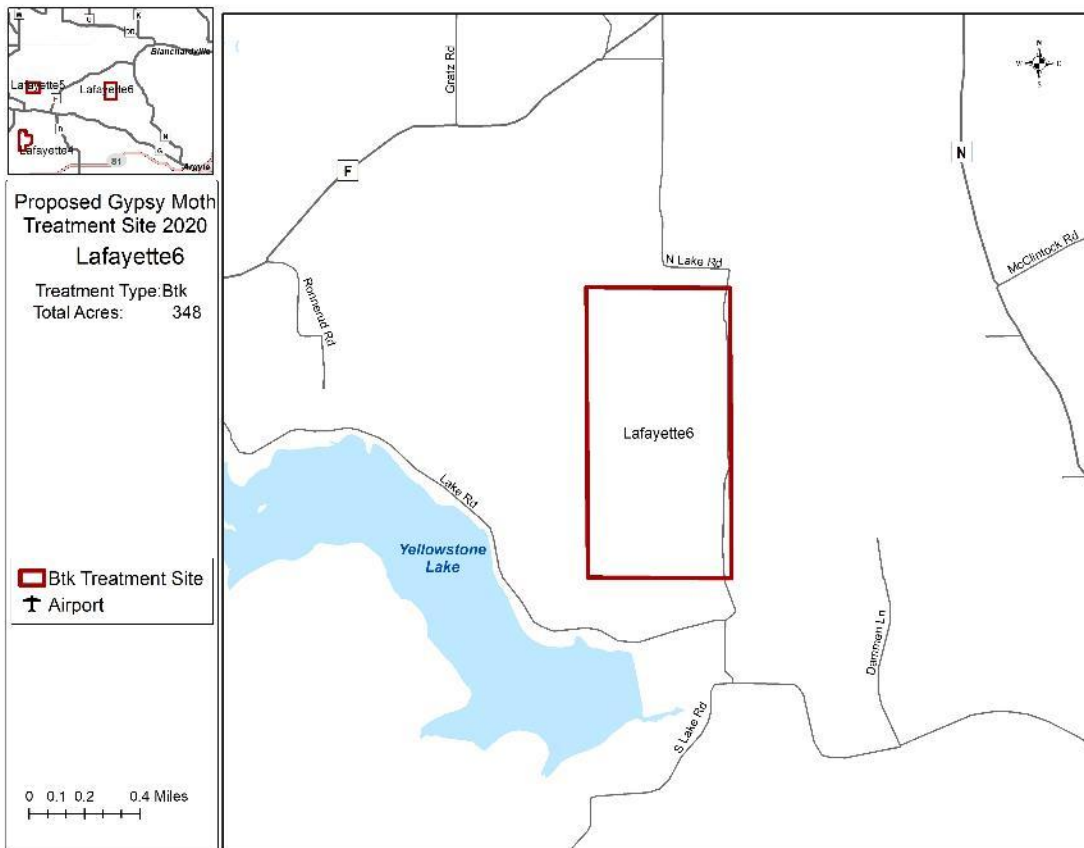
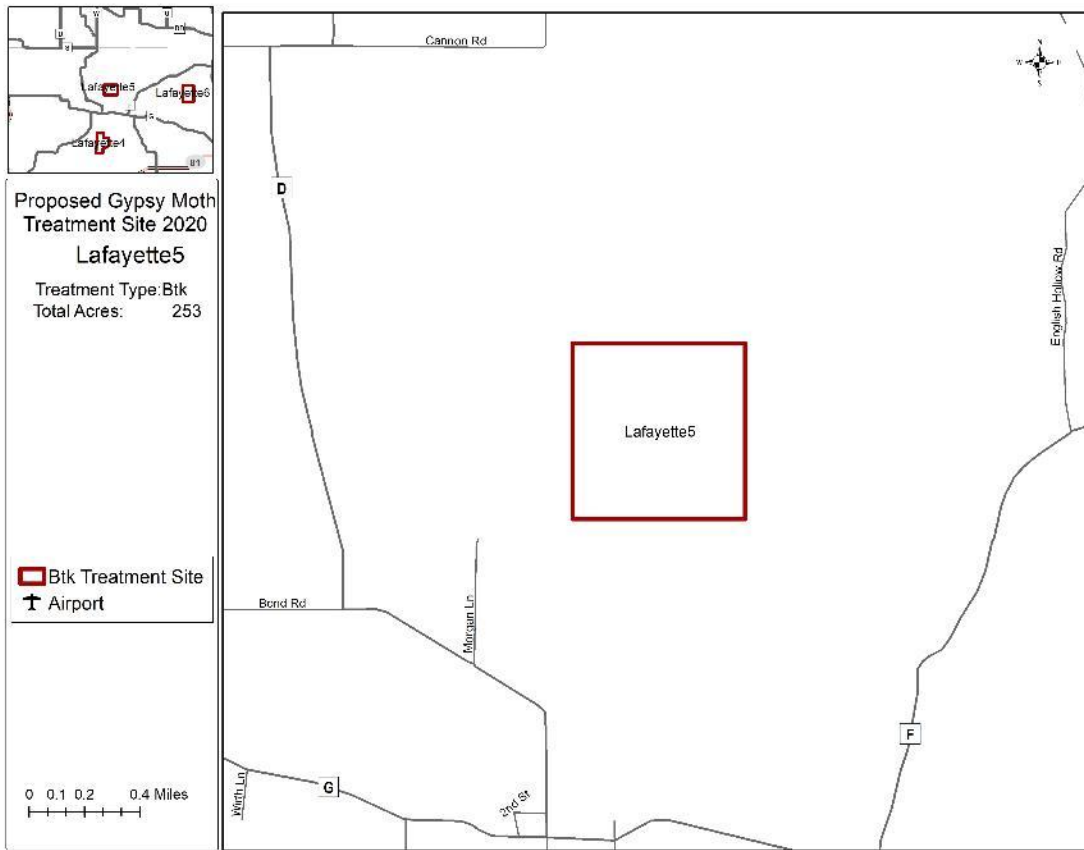
 Btk Treatment Site
 Airport

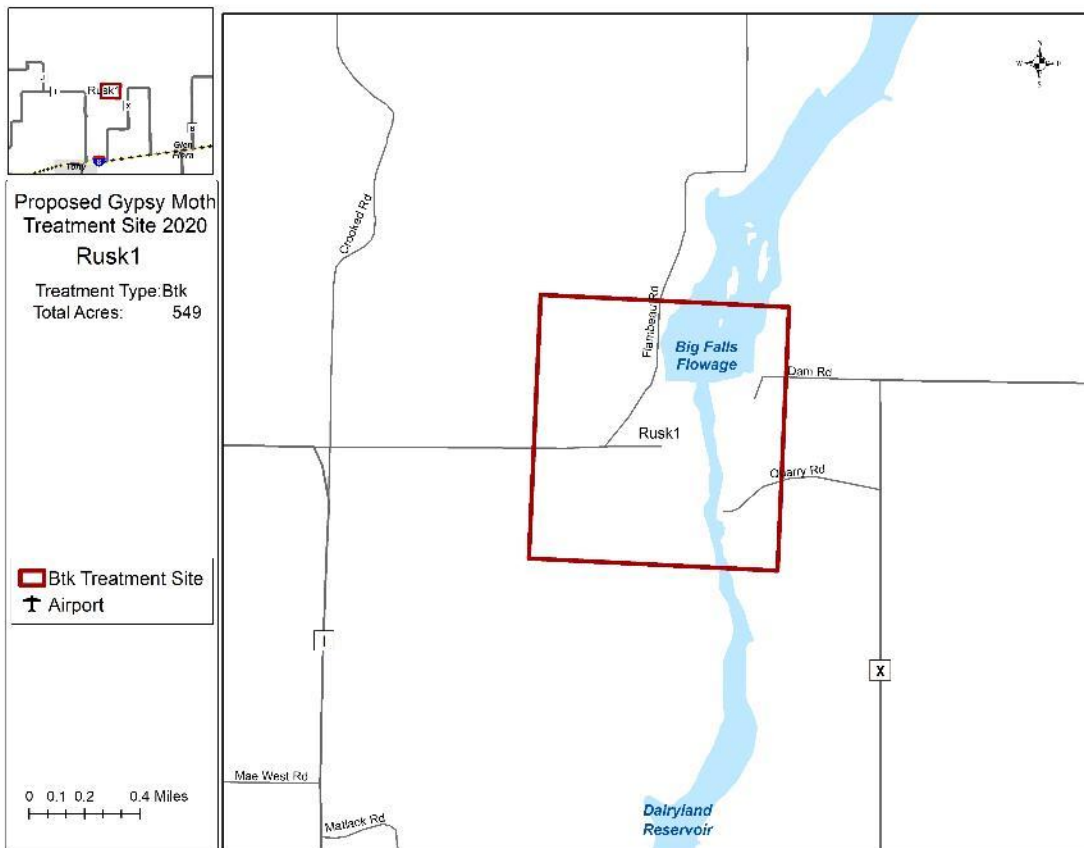
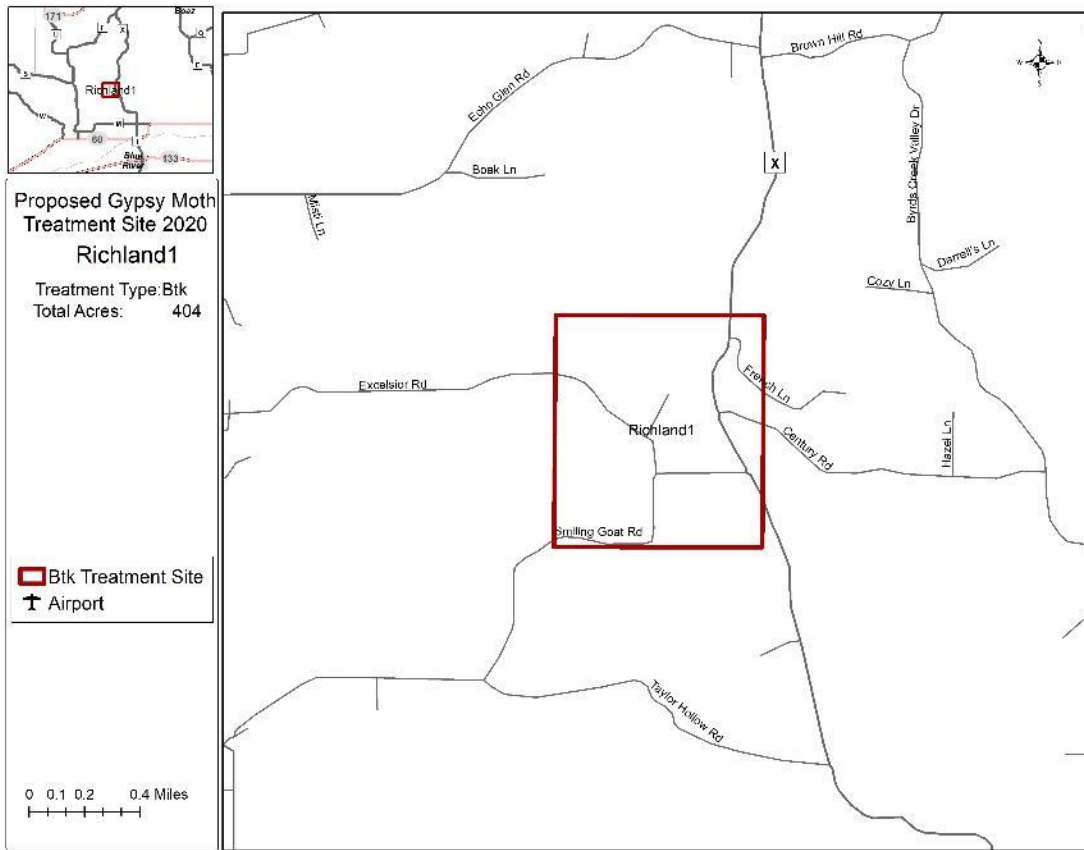
0 0.1 0.2 0.4 Miles

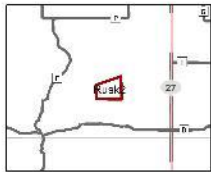















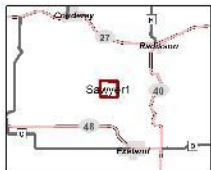
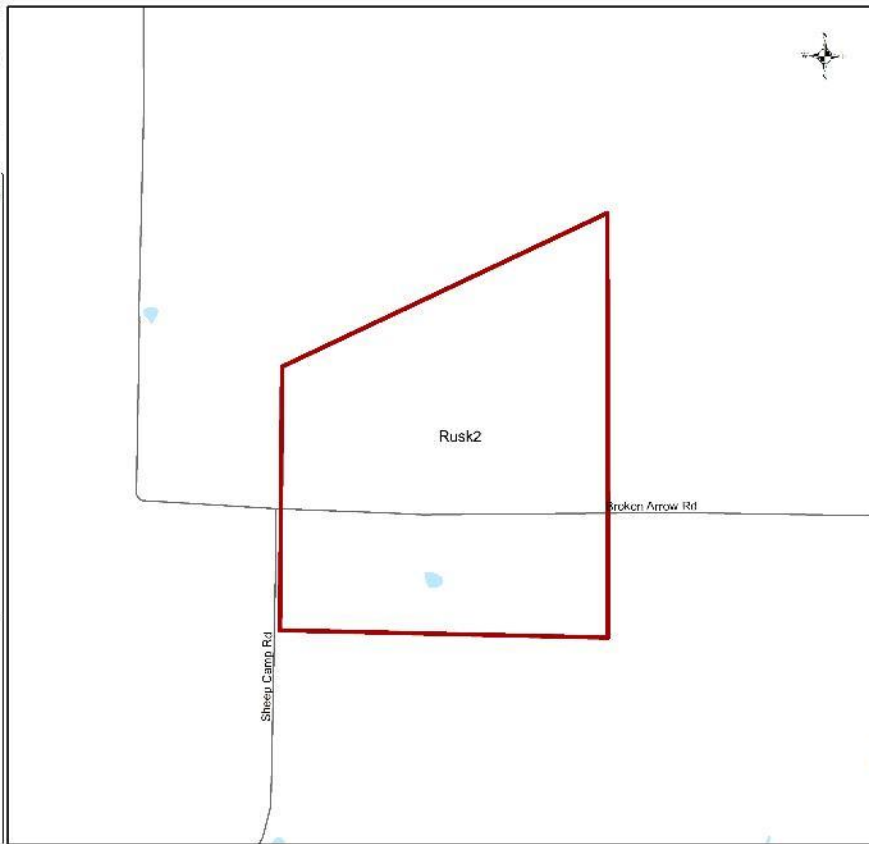
**Proposed Gypsy Moth
Treatment Site 2020**

Rusk2

Treatment Type: Btk
Total Acres: 940

 Btk Treatment Site
 Airport



0 0.1 0.2 0.4 Miles





**Proposed Gypsy Moth
Treatment Site 2020**

Sawyer1

Treatment Type: Btk
Total Acres: 567

 Btk Treatment Site
 Airport

0 0.1 0.2 0.4 Miles






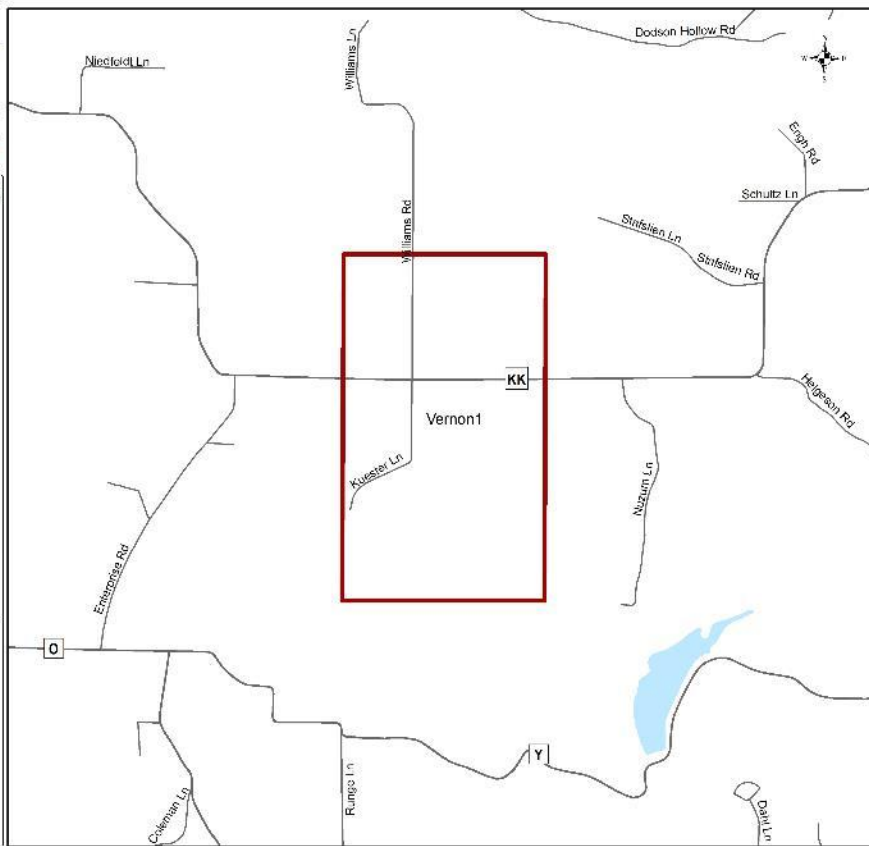
**Proposed Gypsy Moth
Treatment Site 2020**

Vernon1

Treatment Type: Btk
Total Acres: 586

Btk Treatment Site
 Airport

0 0.1 0.2 0.4 Miles



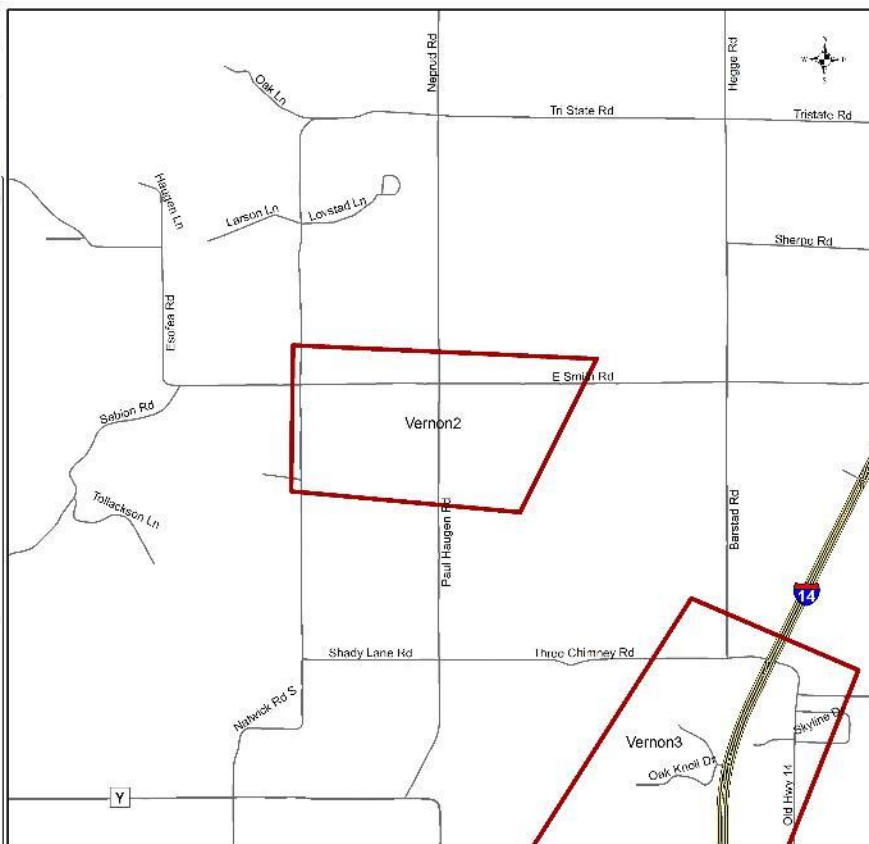
**Proposed Gypsy Moth
Treatment Site 2020**

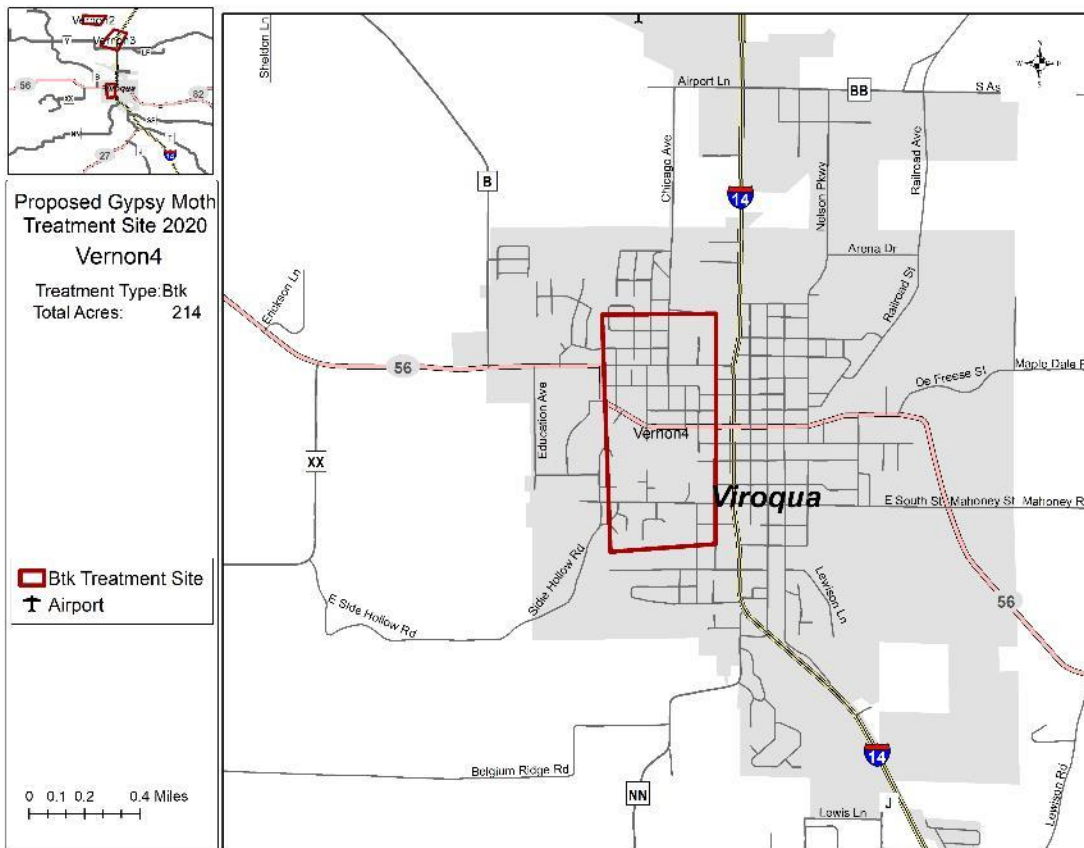
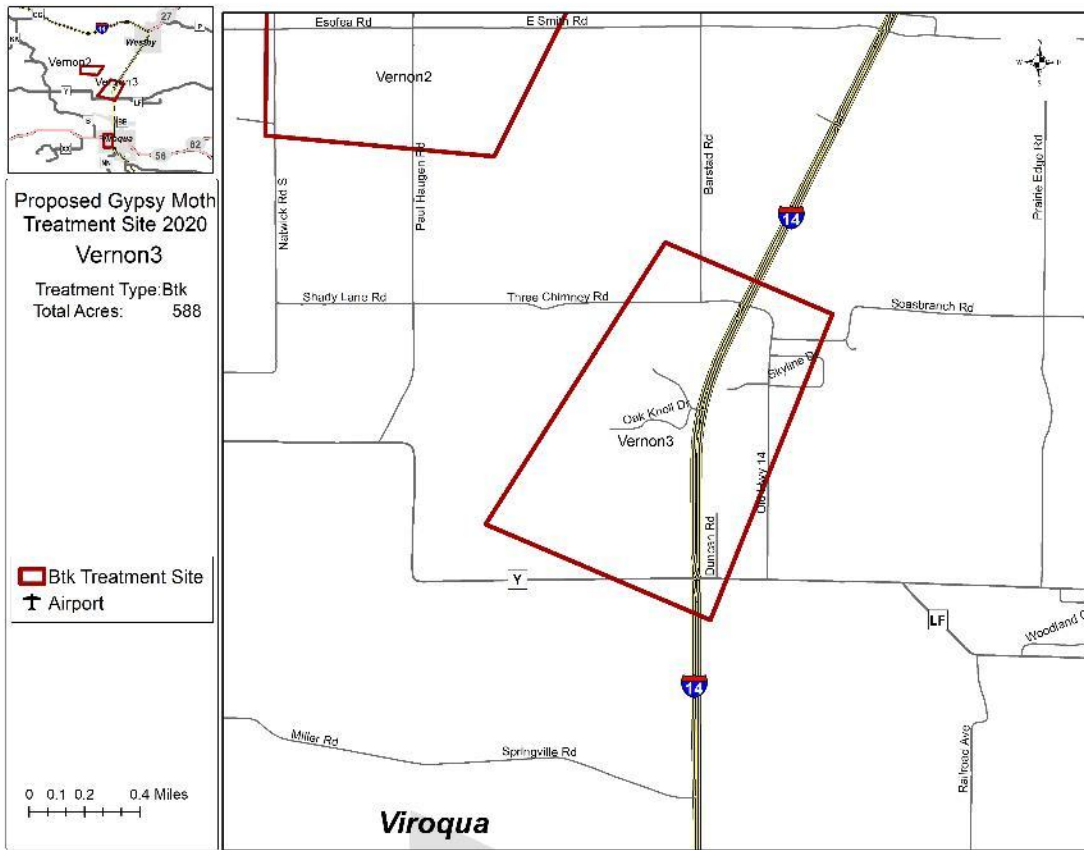
Vernon2

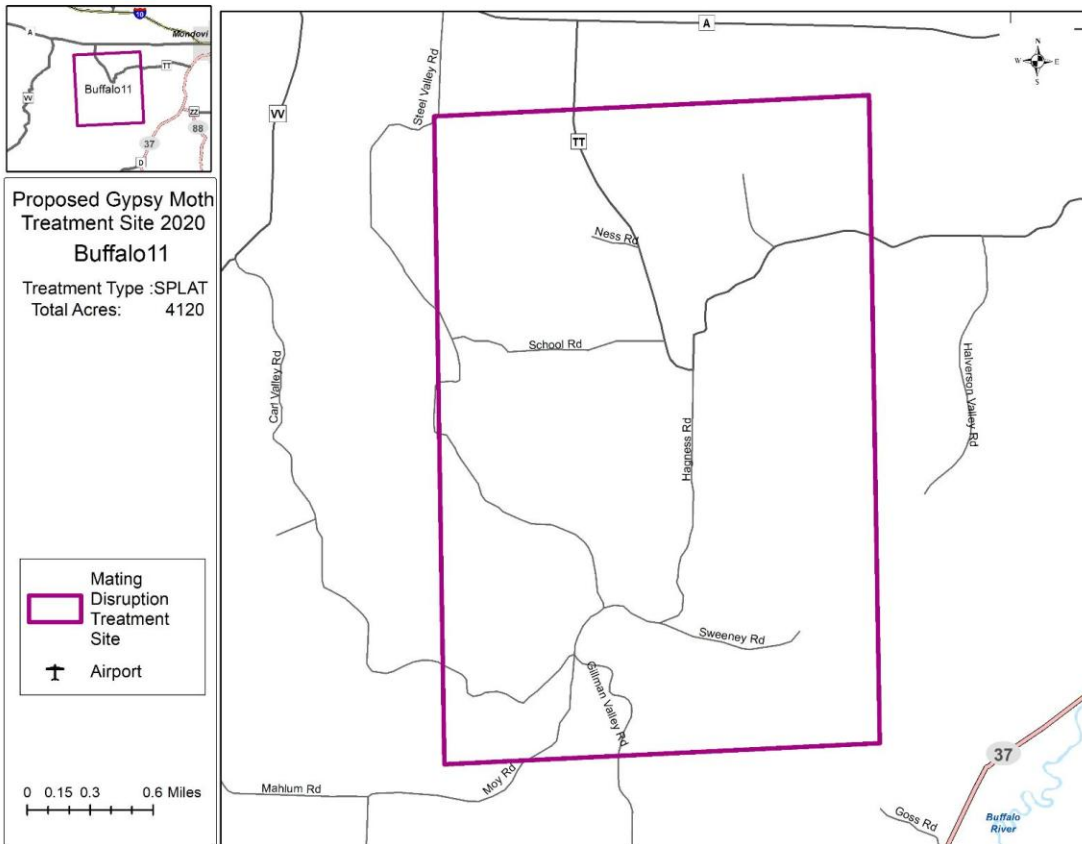
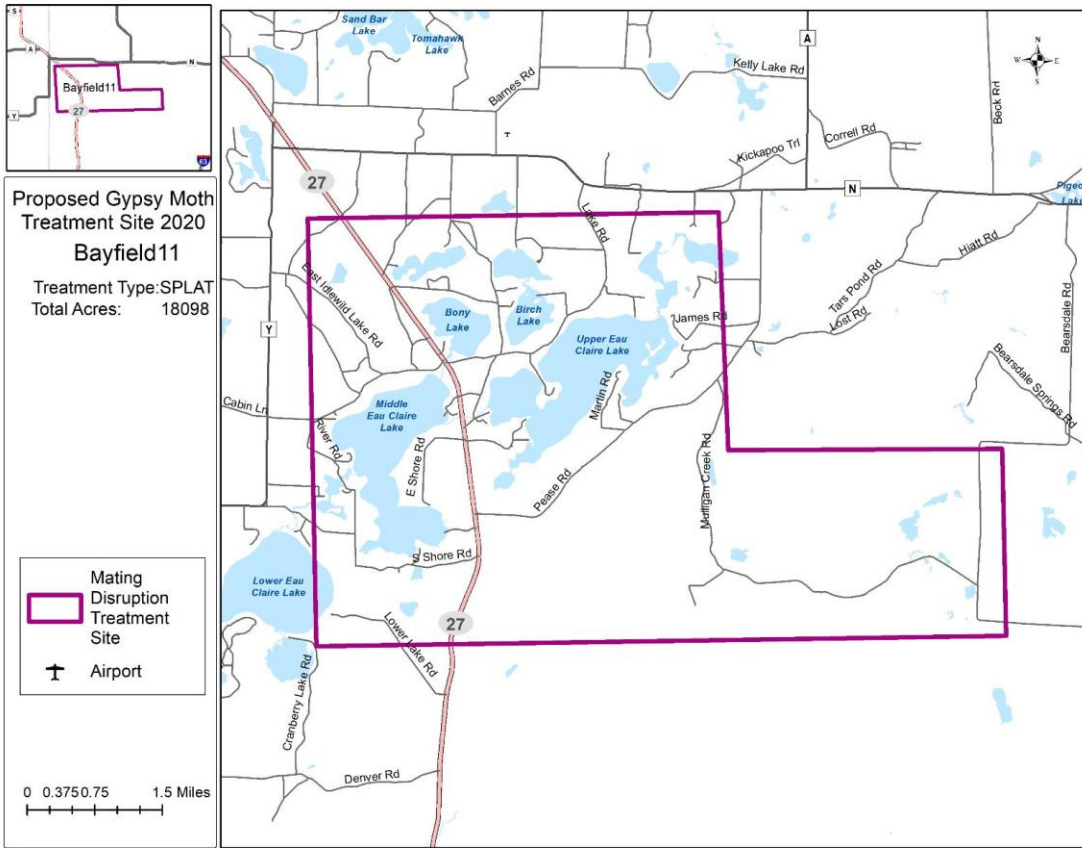
Treatment Type: Btk
Total Acres: 339

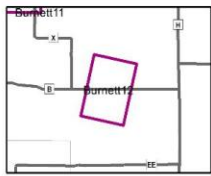
Btk Treatment Site
 Airport

0 0.1 0.2 0.4 Miles







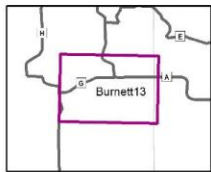


**Proposed Gypsy Moth
Treatment Site 2020
Burnett12**

Treatment Type :SPLAT
Total Acres: 1857



0 0.1250.25 0.5 Miles

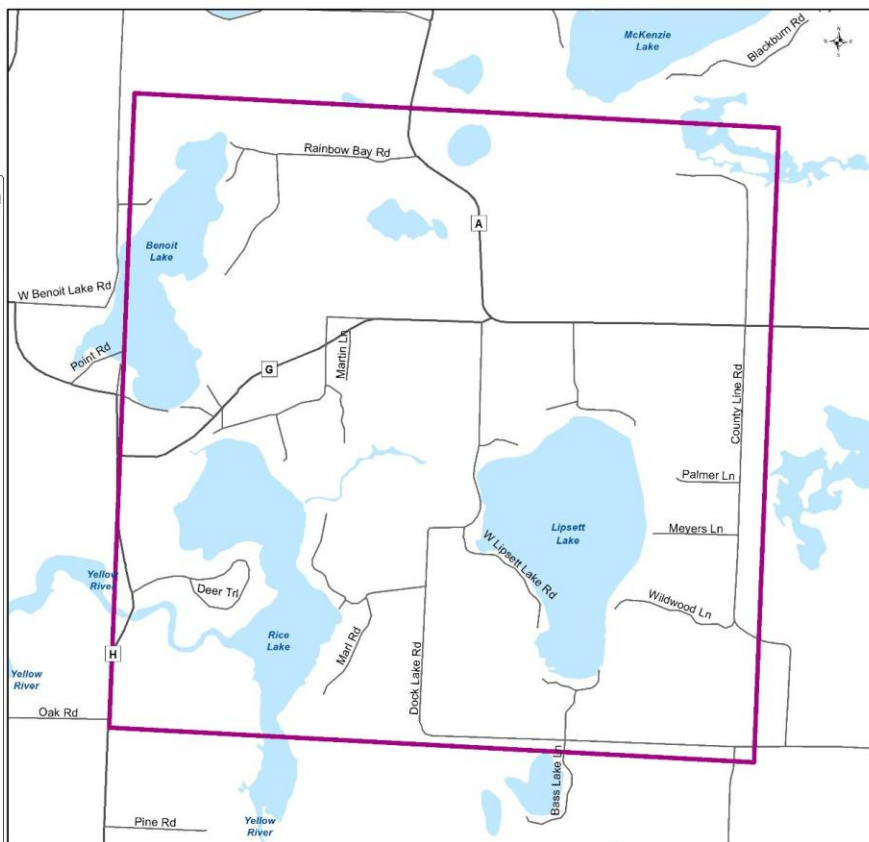


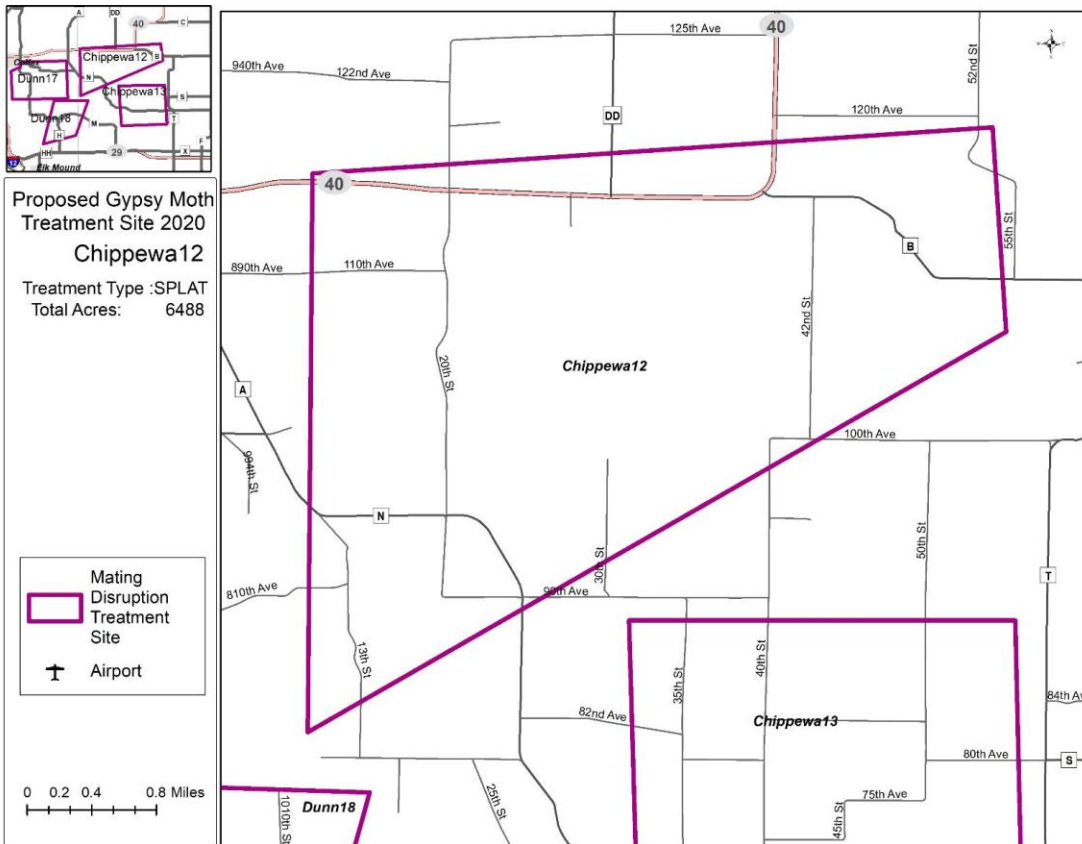
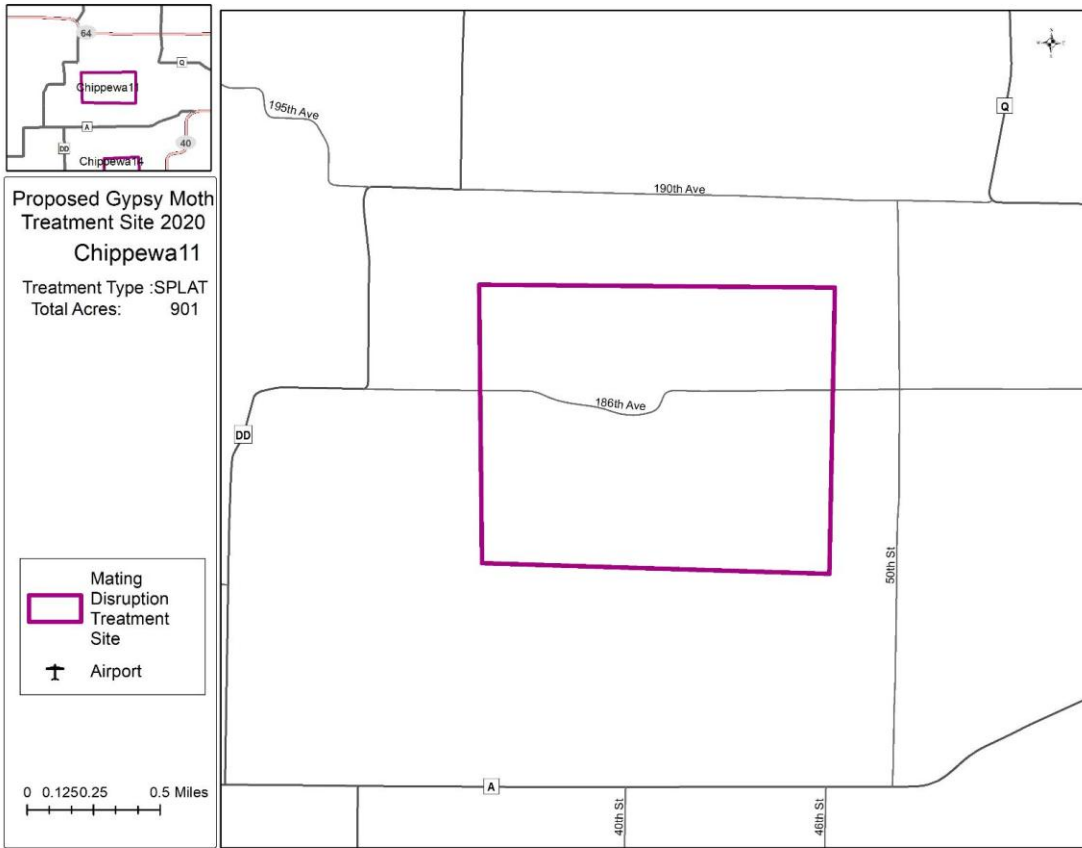
**Proposed Gypsy Moth
Treatment Site 2020
Burnett13**

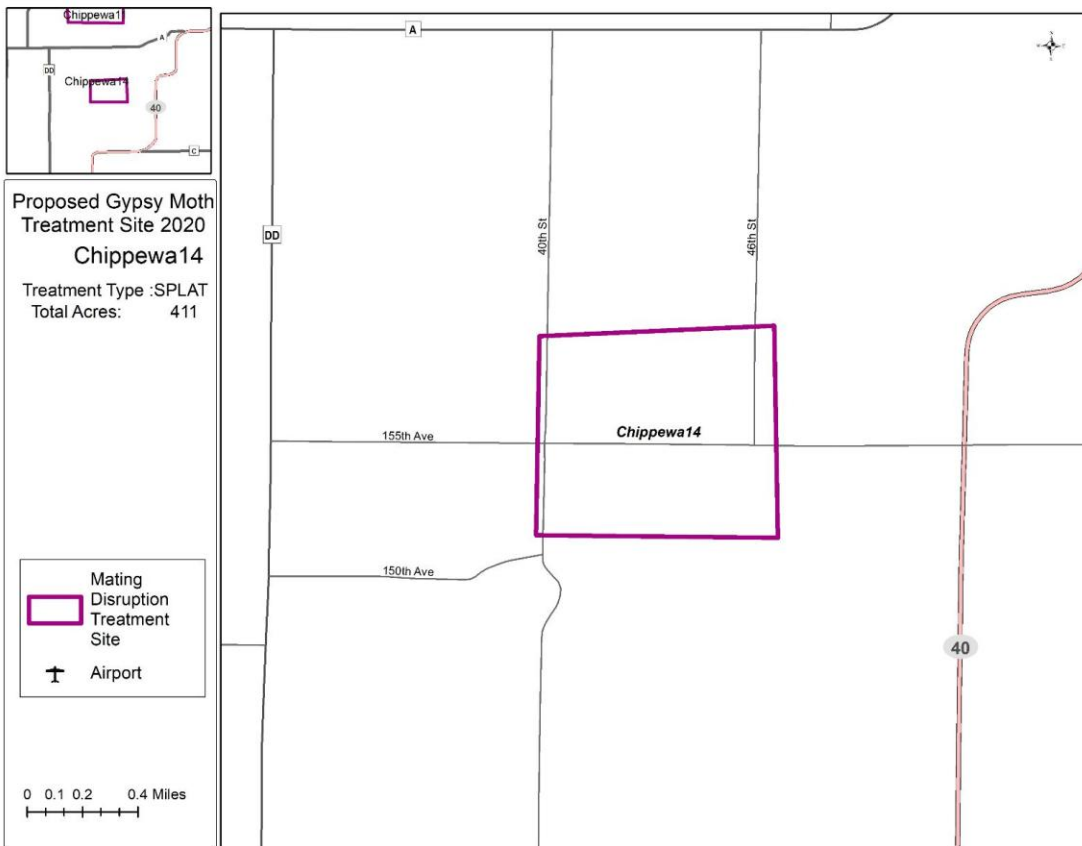
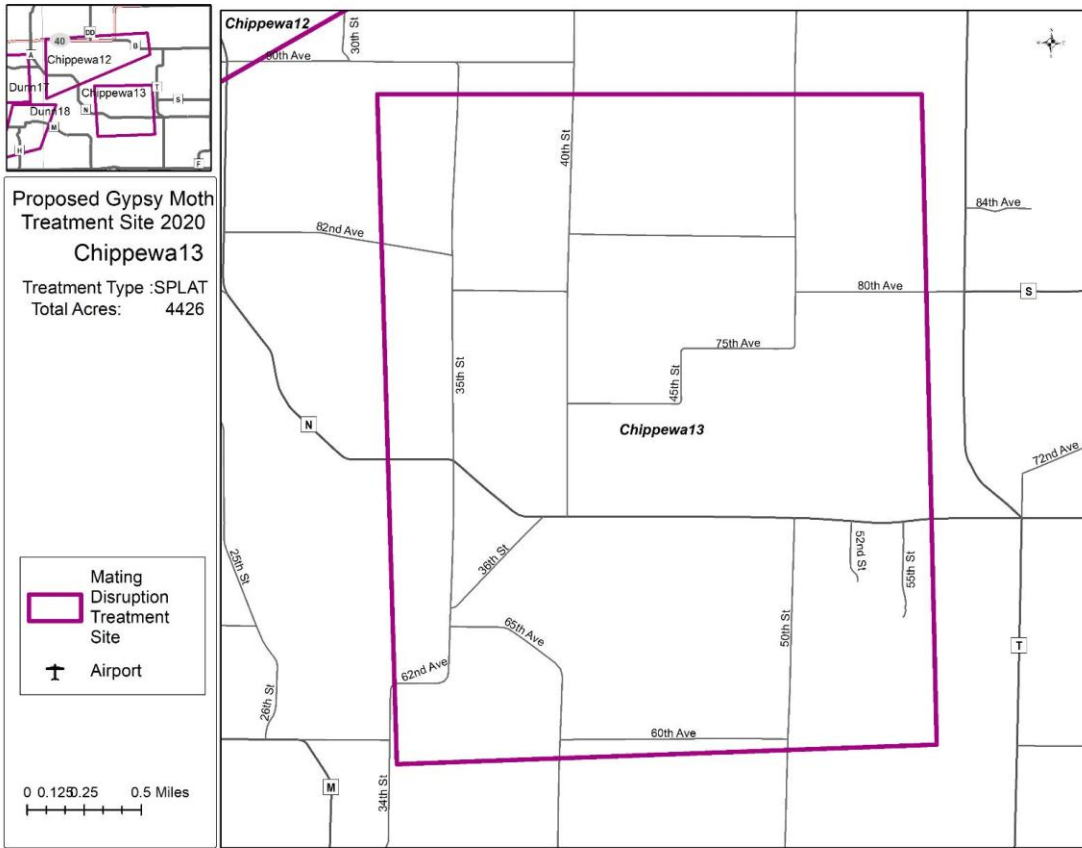
Treatment Type :SPLAT
Total Acres: 5844

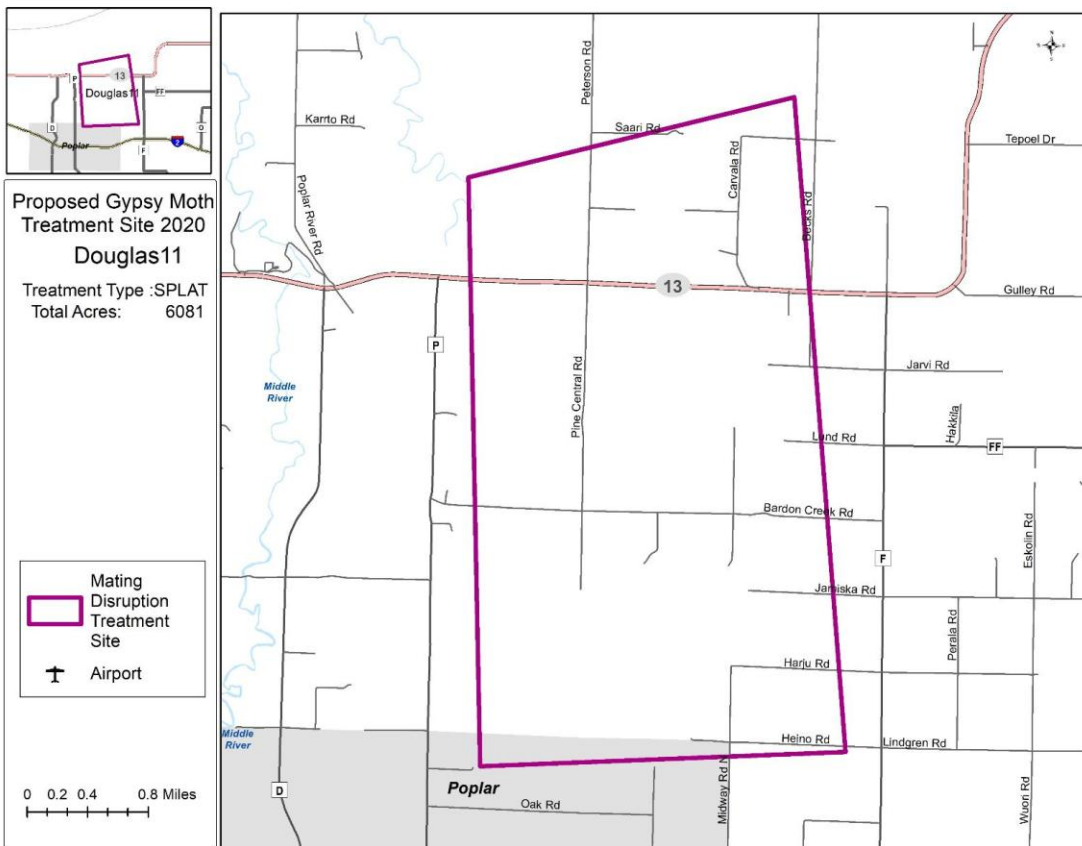
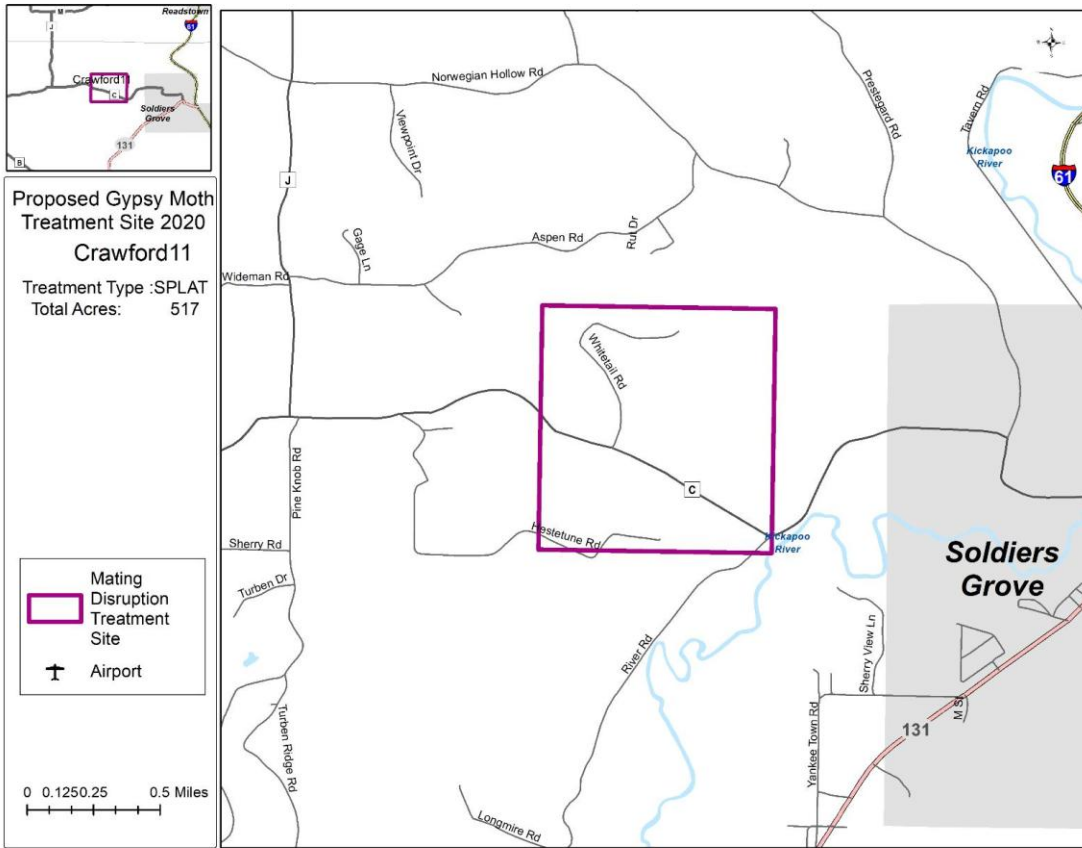


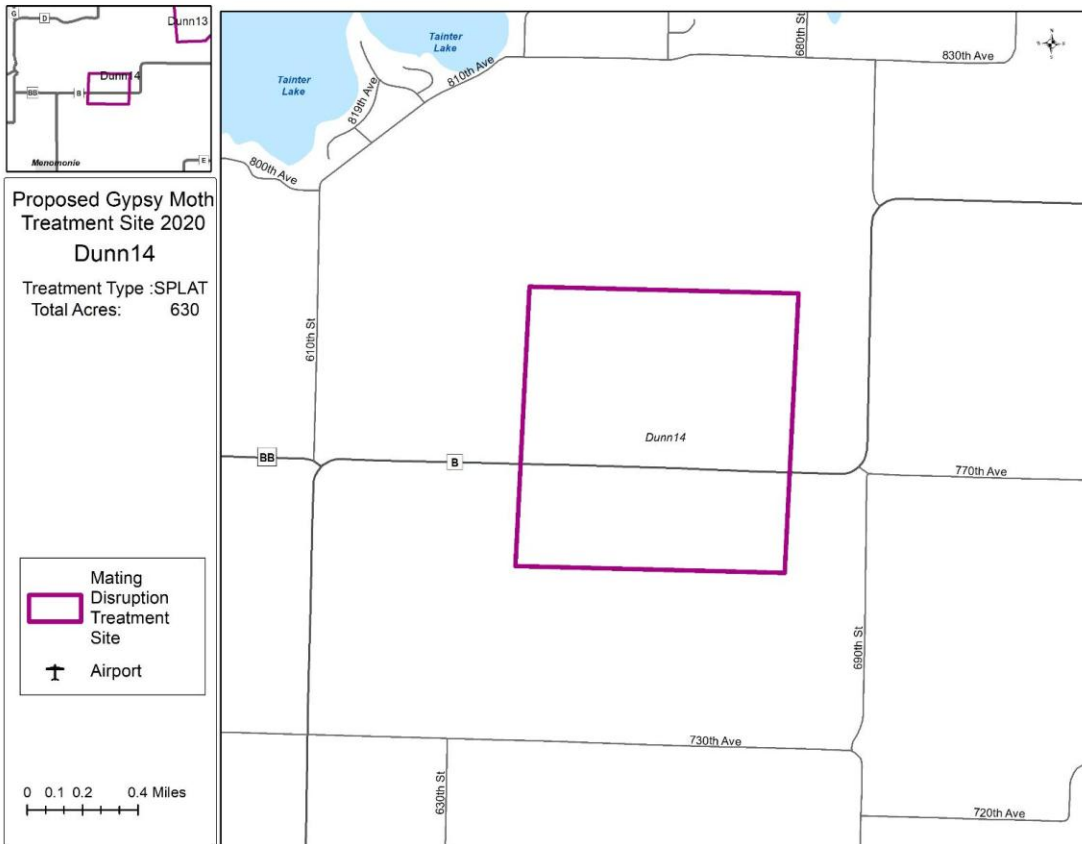
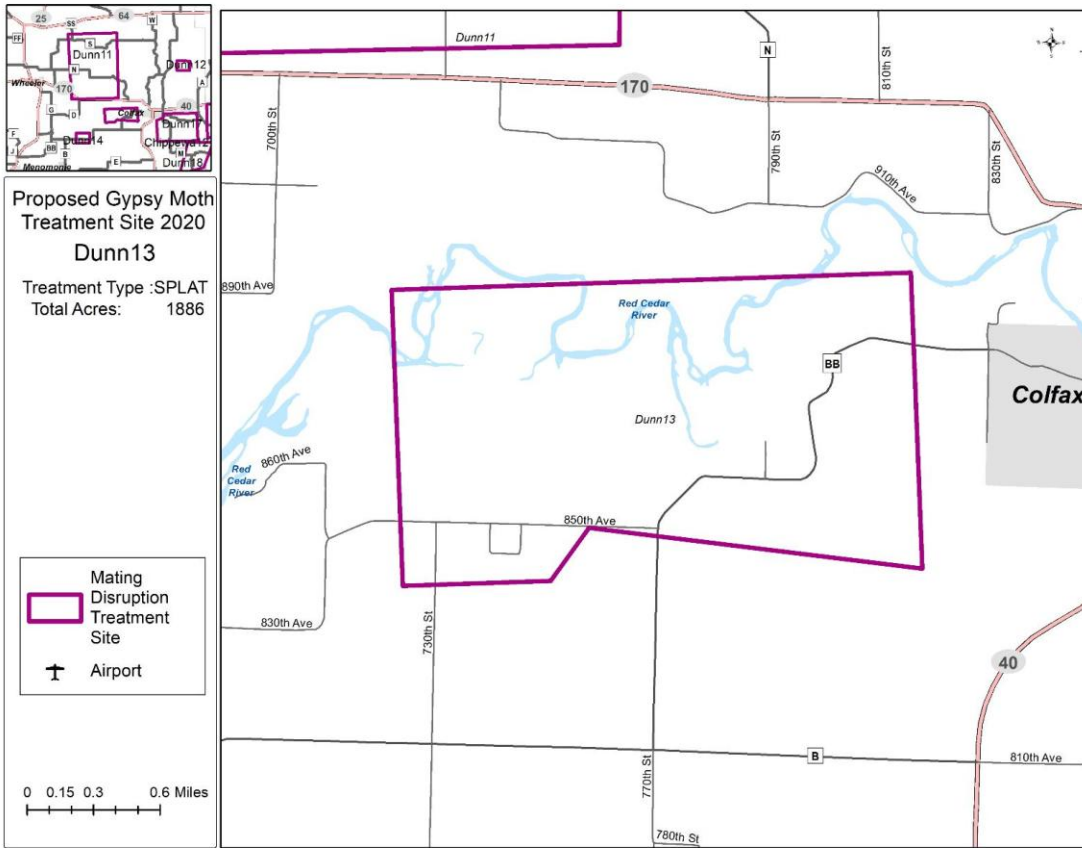
0 0.15 0.3 0.6 Miles

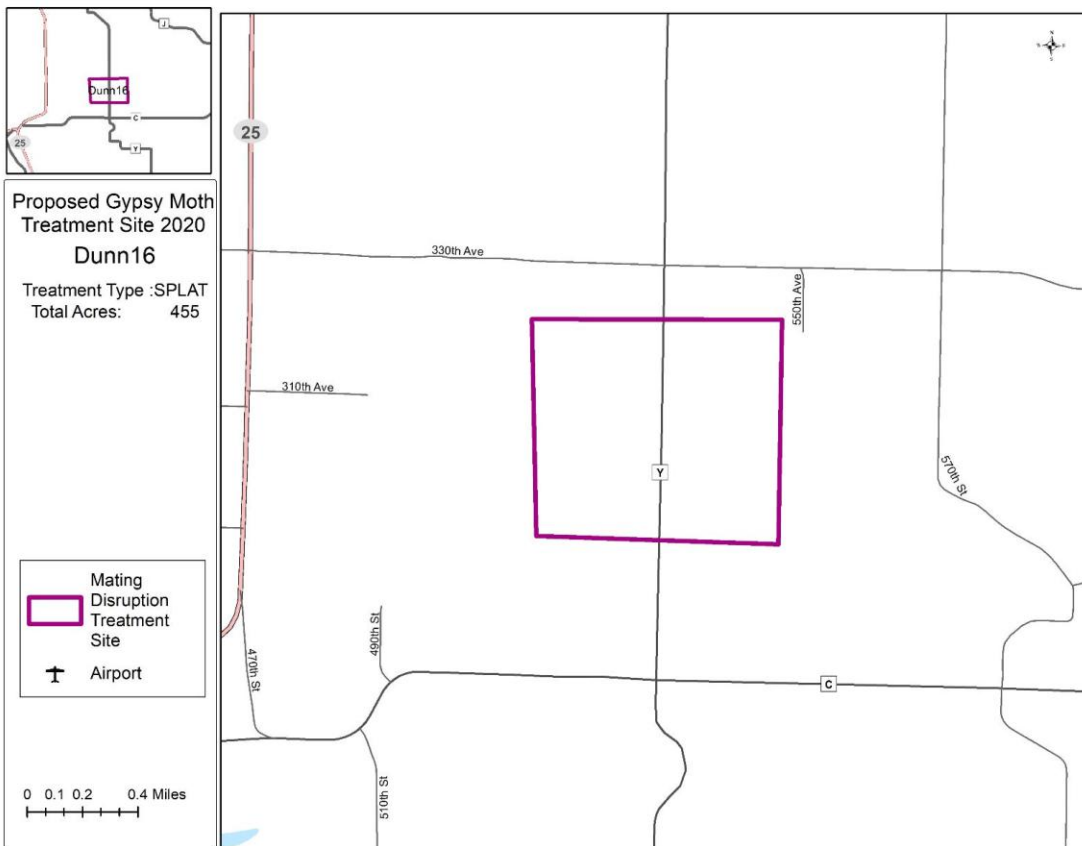
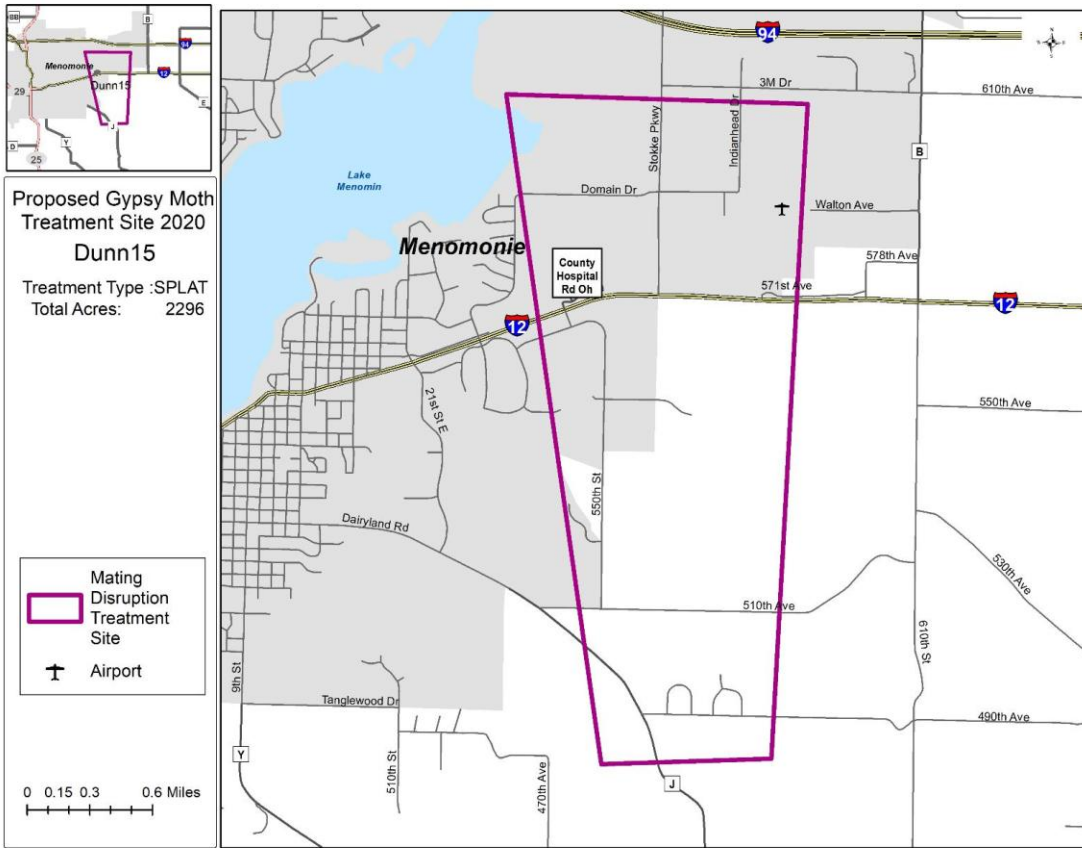


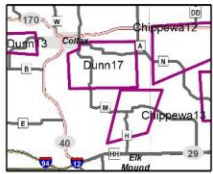








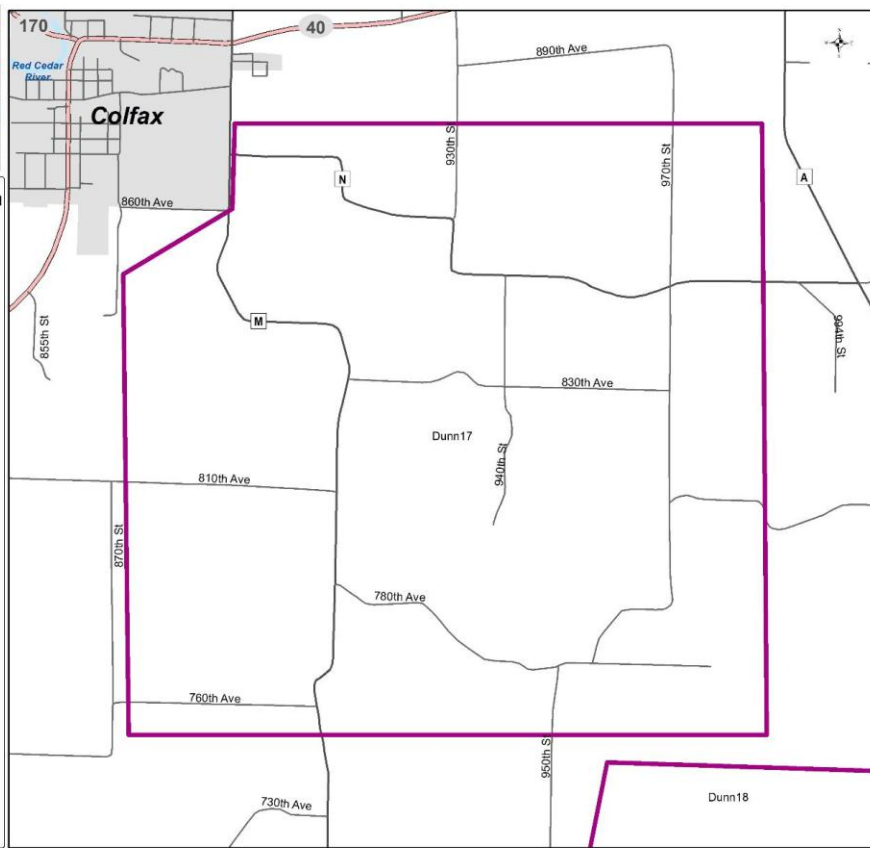
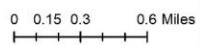




**Proposed Gypsy Moth
Treatment Site 2020**

Dunn17

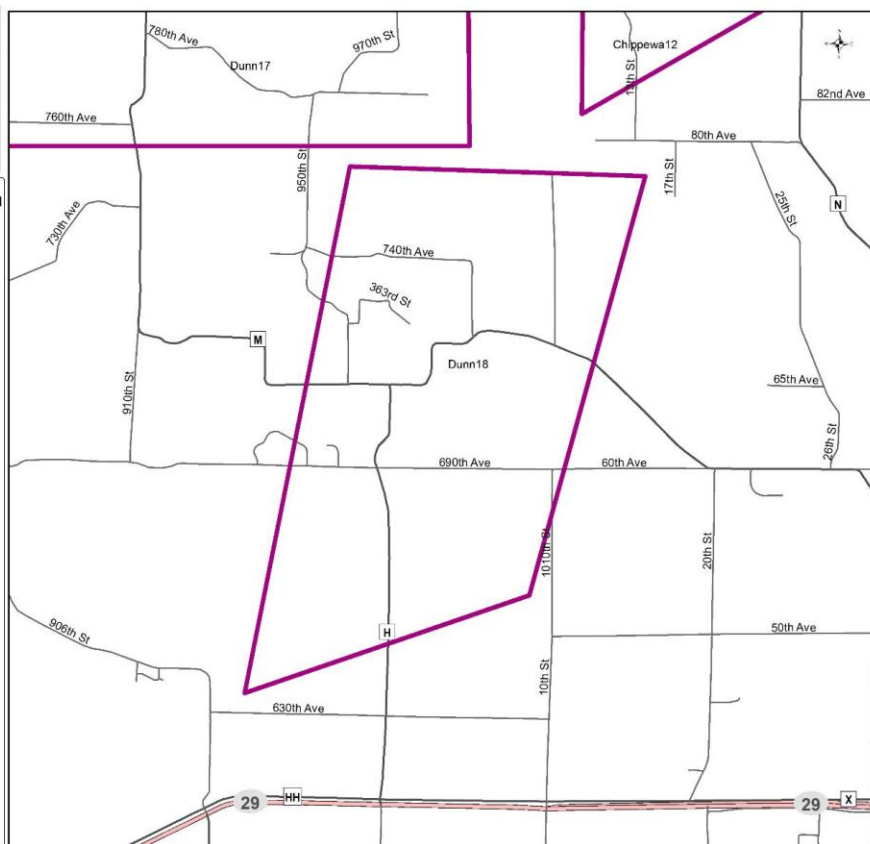
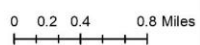
Treatment Type :SPLAT
Total Acres: 4940



**Proposed Gypsy Moth
Treatment Site 2020**

Dunn18

Treatment Type :SPLAT
Total Acres: 3077





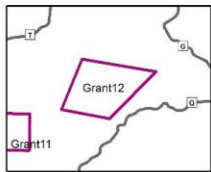
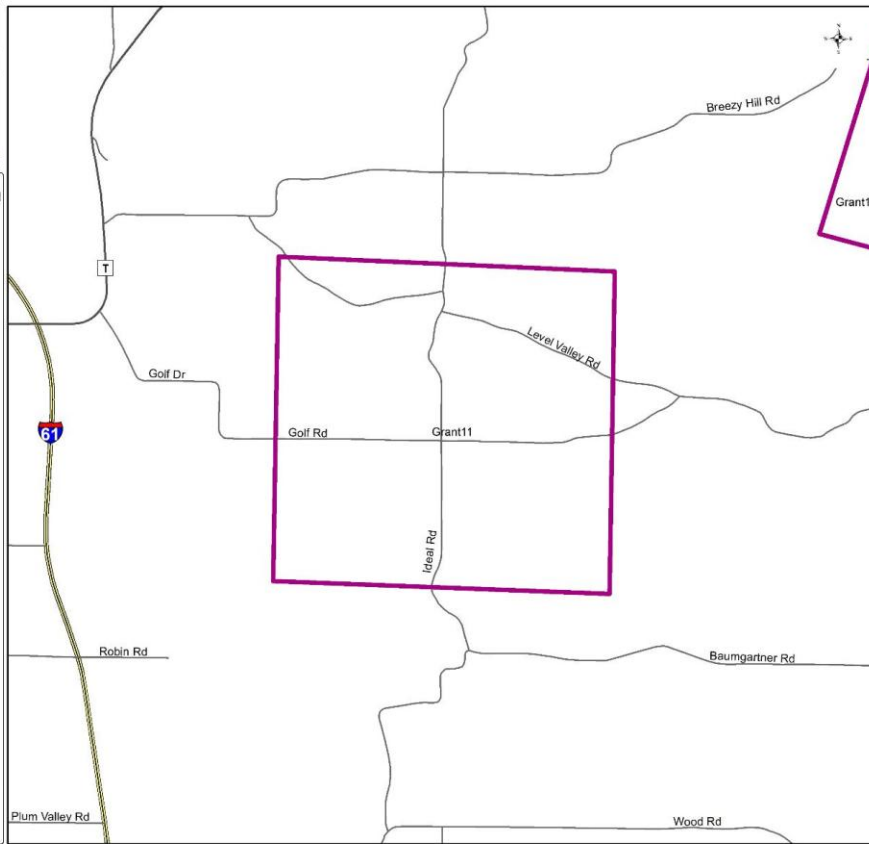
**Proposed Gypsy Moth
Treatment Site 2020**

Grant11

Treatment Type :SPLAT
Total Acres: 1422



0 0.15 0.3 0.6 Miles



**Proposed Gypsy Moth
Treatment Site 2020**

Grant12

Treatment Type :SPLAT
Total Acres: 2482



0 0.15 0.3 0.6 Miles

